The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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A Complete Success

THE British Industries Fair in London, which closed yesterday (Friday), after a fortnight's run, may be safely pronounced the most successful yet held, and equally the Chemical Exhibition is admitted to be its most distinctive and impressive feature. The officials responsible for the organisation are thoroughly pleased with the results; the verdict of the chemical and dyestuff exhibitors as a whole is decidedly favourable; that small proportion of the public who have been admitted to the exhibition have been interested and impressed. In individual cases some disappointment is frankly expressed at the practical results, but this, we think, may be partly put down to false expectations. The exhibition is not to be judged merely as a row of shops opened for a given period for the sole purpose of booking orders. Any orders that fall into the exhibitor's net are, no doubt, welcome, but that is not the supreme end in view. The main purpose is a dignified collective demonstration of the capacity of our chemical and dyestuff concerns, for the information first of the trade and next of the public.

From this point of view the exhibition has been a striking success, and the results, like those of good advertisement always, may be reaped after many days and in ways that cannot always be traced. In addition to these external effects, the internal influence is good. As one shrewd observer put it, the exchange of opinion and experience between manufacturers and salesmen of different concerns has been highly educational, and has tended to develop a sense of the unity underlying the competition for orders. Only a few words are needed to point out the main lessons of this year's Fair. The first is that for chemicals and dyestuffs London will probably be voted the best centre. The second is that there can be no retreat from the standard attained this year; the only possible policy now is to work for a further advance. The third is that the educational effect of such an exhibition is too good to be strictly confined to the trade. Exactly how the general public are to be brought within the range of the Fair it is impossible to say at the moment, but the need of a wider diffusion of influence is recognised, and means will no doubt be found to meet it.

It only remains to say how much we appreciate the many cordial expressions of appreciation received from widely different quarters on the special Fair issue of THE CHEMICAL AGE published last week, followed this week by an attempt to complete the story. Such an exhibition could only have been produced by the real public spirit which the exhibitors threw into their work, and it is a satisfaction to be recognised in our own degree and place, as partners in a collective triumph.

The Title "Chemist"

THE Legal and Parliamentary Committee of the Institute of Chemistry have prepared a statement on this familiar subject for the discussion of the local sections in order to elicit further opinions, and a more admirable historical and critical summary it would be difficult to conceive. This statement, which appears in the new issue of the Institute *Journal*, points out that the distinction between chemistry and pharmacy is indicated by the titles of the two chartered bodies which respectively represent the two professions. This distinction in the title of the representative bodies clearly supports the claim that the members of the two professions should be distinguished as chemists in the one case and as pharmacists in the other. If this distinction had become generally recognised by the members of both professions and by the public there would undoubtedly be a strong case for giving statutory effect to it by an enactment which would prohibit the use of the title "chemist" by persons who are not qualified in the profession of chemistry as it is understood by the Institute. Unfortunately this is not yet established. Pharmacists and druggists continue to call themselves "chemists," and, notwith-

standing the definitions appearing in dictionaries, appeals to history and literature or to the custom of other countries, the word "chemist" still to the majority of the public suggests primarily the person who sells them medicine. The vendor of drugs has been styled a chemist by long established usage; Parliament has actually confirmed his right and has purported, subject to the definition in Clause III. of the Act of 1868, to give him the legal right to use the title, and it would seem difficult now without the consent of the Pharmaceutical Society to deprive him of it. On the other hand the title cannot be, and never has been, denied to any man distinguished in chemical science, and he cannot be described other than as a "chemist." The term is applied by Government itself to the Government chemist and the Admiralty chemist. The study and teaching of chemistry, the science of its application to the arts and manufactures and to purposes of public health and the analysis and synthesis of substances, are all clearly outside the scope and purposes of the Pharmacy Acts, and, therefore, it may be assumed that the legislature in prohibiting the use of the title "chemist" except by registered persons did not intend the prohibition to apply to the long established use of the title by men of science who had nothing to do with the sale of poisons. It is unlikely in any event that members of the Institute would rest content with any substitute or newly devised term in place of that of "chemist"; they cannot be described otherwise, but pharmacists have several alternative titles indicated in the Act which correctly denote their calling. The Pharmaceutical Society has never attempted to apply the Acts so as to prevent analytical and technological chemists from using the title "chemist," while many members of the Pharmaceutical Society are in favour of that of "pharmacist," and have adopted it.

The Accuracy of Thermometers

THE ordinary thermometer is such an essential everyday companion that long association with it has tended to persuade us to regard it with infallibility. We seldom stop to think what the effect of a small percentage inaccuracy in temperature registration might be, although in determinations of, say, the calorific power of a gas a slightly inaccurate thermometer might lead us well astray. Mr. C. S. Robinson of the Massachusetts Institute of Technology recently drew attention in one of our American contemporaries to the fact that any form of temperature measuring instrument (*i.e.*, thermometers and pyrometers) when inserted in a gas for the purpose of measuring its temperature, does not, except under unusual conditions, record the true gas temperature, and the deviation may in cases of high temperature amount to several hundred degrees, and at ordinary temperatures it may be as much as 10° or more. It has long been known that heat is transmitted by radiation in a similar manner to light, and that it can be reflected, refracted, and absorbed; also that different substances have different radiating as well as different absorbing powers. However, while the effects of radiation on thermometer and pyrometer measurements of gas temperatures have been well known by physicists, it has not been common knowledge that thermometer and pyrometer measurements are subject to such deviations. Thousands of tests have been carried out on furnaces, in which gas temperature has been measured in the usual way, and furnace efficiencies calculated, when the temperatures thus measured may have been far from the fact. Mr. Robinson proceeds to explain how true gas temperatures may be calculated, and shows that the flow of heat to or from a thermometer occurs by conduction and convection between the gas and the thermometer, and by radiation between the thermometer and the surroundings. Under certain circumstances the different ways in which the heat flows obviates a correct determination. For instance, a thermometer inserted in the air between the tubes of a steam coil heater for air, where the heating tubes are hotter than the air, would indicate a temperature between that of the air and that of the hot surfaces, the thermometer reading too high. When the utmost precision is required the reading must be corrected for the effect of radiation; but it has been shown that for measurements permitting of small errors a fairly close approximation will be obtained if a silver shield is used, or, if corrosive gases are concerned, monel metal can be used in place of silver. It is pointed out, however, that where gas is moving at high velocities any thermometer will read practically the true temperature, the large deviations occurring where the velocities are very low. The question, however, is worth bearing in mind, although, of course, as the practical works chemist is not usually associated with processes which demand absolute precision in temperatures, it is mainly of academic interest.

British Fine Chemicals

THE list of British Fine Chemicals produced by members of the Association of British Chemical Manufacturers, which was issued this week, constitutes the best sort of evidence of the constructive work in this field which is steadily going on. The firms whose products are included number thirty-nine, and the products themselves cover about as many pages, with additional pages devoted to indicators and microscopic stains (dry). In an introductory note it is stated that the Association wish to make an appeal to all research chemists and other users of fine chemicals in this country on behalf of the fine chemical industry, both on patriotic grounds and in recognition of the valuable work done by the industry in supplying the needs of the naval and military forces, and of the general public during the years of war.

"The manufacture of fine chemicals," the note proceeds, "is now recognised as a key industry of vital importance to the welfare of the Empire in times of war, and must therefore be fostered and encouraged in times of peace. The present time is critical in the establishment of the industry on a permanent and successful basis, and unless it receives support from research chemists and the general public, it will inevitably fall back into its pre-war state of comparative insignificance. When the Association's earlier pamphlet on 'British Research Chemicals' was published a promise was made that the list would be supplemented from time to time. The list which follows is an attempt to fulfil that promise. A large number of organic products have been added, and the list now also includes fine inorganic chemicals, indicators, and microscopic stains. In view of the enlarged scope of the list the title has been altered to 'British Fine Chemicals.' It must not be assumed that the pamphlet contains a complete list of fine chemicals

made in this country, but it enumerates the products of a certain section of the members of the Association of British Chemical Manufacturers. It is hoped that the list will continue to be supplemented from time to time, as the manufacture of new chemicals is undertaken by one or other of the firms according to demand. There are certain chemicals in the list a permanent supply of which cannot be guaranteed unless there is sufficient demand. All the distributing houses are in possession of this list, so that orders may be sent through the usual trade channels. In special cases, of course, applications can be sent direct to the manufacturers when they will be dealt with according to the custom of the firm concerned. All questions of difficulty and inquiries for chemicals not in the list should be referred to the Association of British Chemical Manufacturers, 166, Piccadilly, W. 1, when every endeavour will be made to meet the requirements of research chemists."

Distillation of Amalgams

OUR readers may recall that a few months back we referred in these columns to the Trent process of effecting the separation of mineral matter from coals by the employment of an oil reagent. Apart from the question of separation the most interesting feature of the process is the plastic fuel which it yields. Up to the inception of the Trent method we had very little knowledge of the behaviour of " amalgam " fuels when subjected to distillation; but the importance with which this process has been viewed in America has led to a detailed study of its capabilities. Primarily, if the distillation of amalgams (*i.e.*, an admixture of coal and heavy petroleums) is found to be practicable, it gives promise of providing a means for utilising poor quality coals and lignites which normally would not be of sufficient commercial value to be worth considering. The treatment of amalgams, in fact, is likely to mark another step forward in the progress now being made with the principle of fuel conservation.

The results of the experiments recently conducted in America (and supplementary to those to which we referred last Autumn) are particularly instructive in that they illustrate the possibility of obtaining a coke from coals which of themselves are of the non-caking variety. Again, the principal effect of mixing oil and coal previous to distillation is greatly to increase the gas yield. For instance, the total heating value of the gases from one ton of the amalgam was 6,109,000 B.Th.U. as against 2,460,288 B.Th.U. for the combined gases from coal and oil. The gaseous increase appears to take place at the expense of the tar, and it has been pointed out that at least a portion of the oil in an amalgam must be regarded as absorbed oil, and under such conditions it would have an abnormally low vapour pressure which would tend to hold it in contact with the coal at temperatures far above its normal boiling point. This would undoubtedly promote cracking or breaking up into simpler hydrocarbons. These experiments were conducted at 600°C. in an electrically heated apparatus, and so far as the solid residues are concerned it was found that whereas those from the coal and oil separately were not coked, the residue from the amalgam was a coke of fair quality and 18 per cent. greater in weight than the combined residues from the two constituents treated distinctly. The amalgam consisted of a mixture of approximately 70 per cent. of coal and 30 per cent. by weight of oil.

Points from Our News Pages

Our second notice of the Chemical and Dyestuff Exhibition at the British Industries Fair, include two pages of photographs and original drawings, impressions of the Fair as a whole, an account of the Parliamentary party's visit on Wednesday, and further detailed notes on the exhibits (p. 308).

Mr. Cyril Atkinson's inquiry into the question whether lactose is a fine chemical coming within the scope of the Safeguarding of Industries Act was opened on Saturday last. The referee reserved his decision (p. 312).

Reports are published of papers read at the London, Manchester, Newcastle, and Nottingham Sections of the Society of Chemical Industry (p. 314).

Mr. Justice Lawrence has made an order for the compulsory winding-up of the Alby United Carbide Factories, Ltd. (p. 315).

Recent questions in Parliament include continued inquiries into the working of the Dyestuffs and Safeguarding of Industries Acts (p. 316).

According to our London Chemical Market report quite a steady business was reported during the week and the improvement in turnover was maintained (p. 323).

In our Scottish Chemical Market report business during the past week is described as having been "fairly good" (p. 325).

Books Received

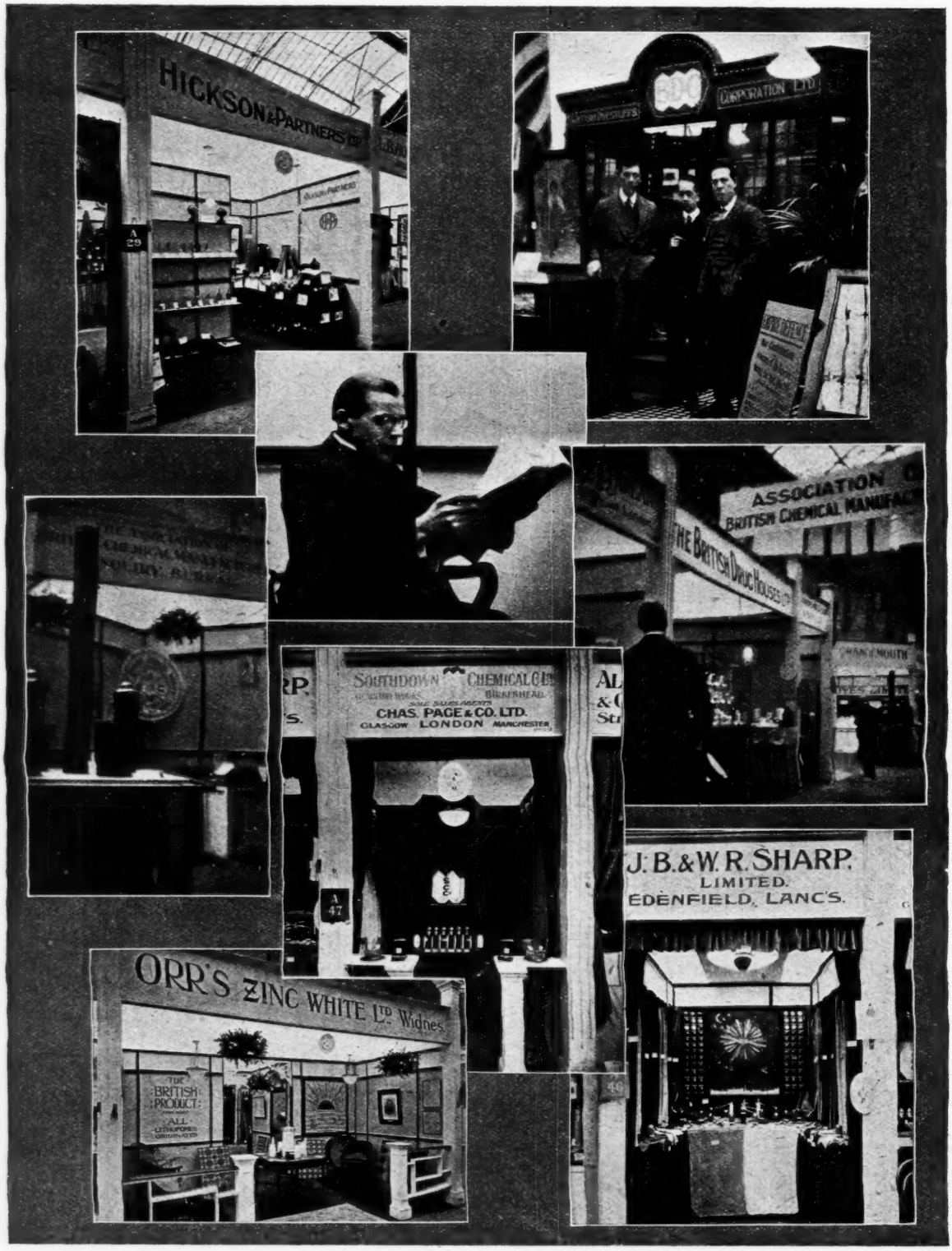
ELEMENTS OF FRACTIONAL DISTILLATION. By C. S. Robinson. London: The McGraw-Hill Book Co., Inc. Pp. 205. 12s. 6d. net.

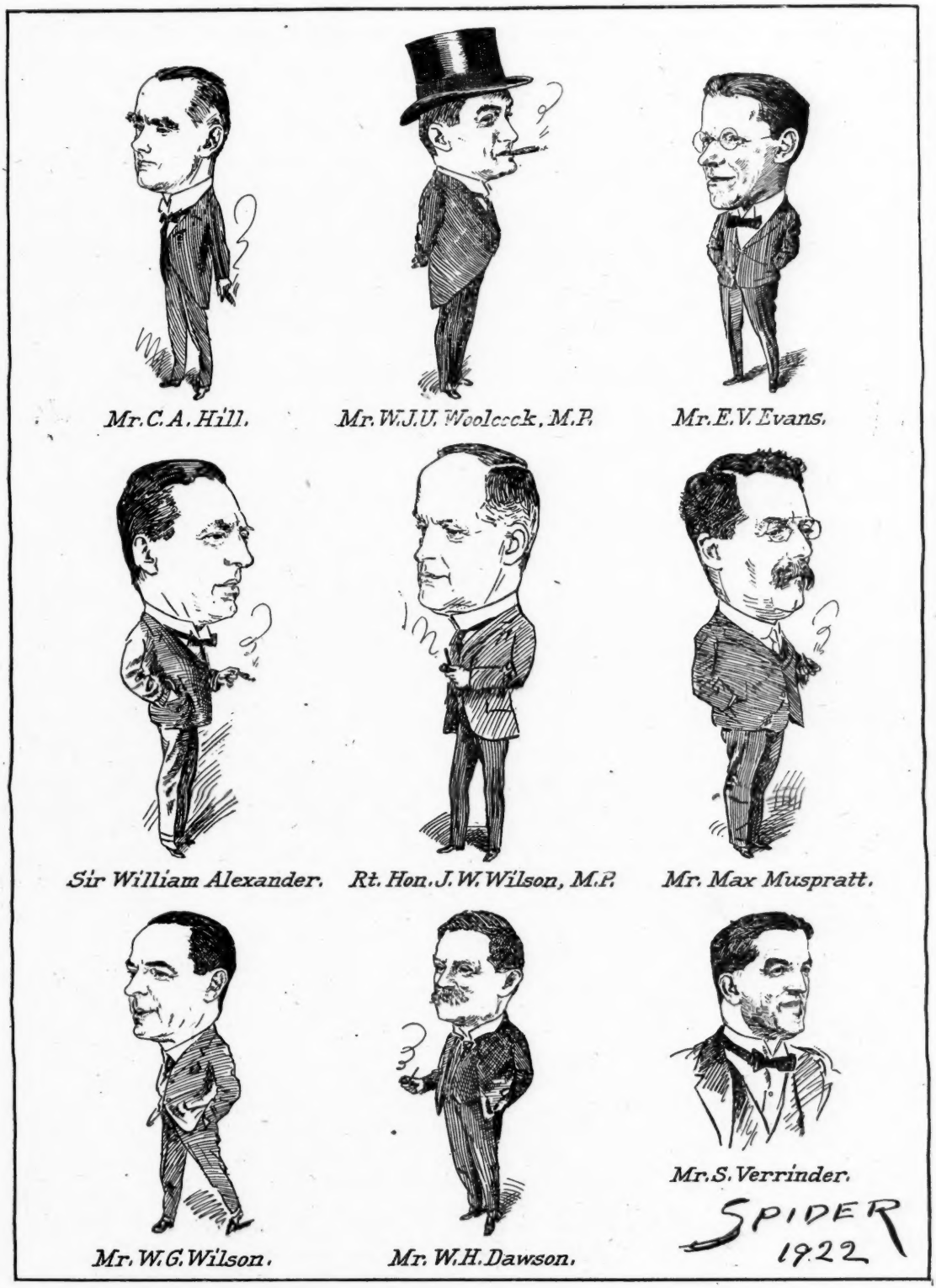
PHYSICO-CHEMICAL PROBLEMS RELATING TO THE SOIL. Report of a General Discussion held by the Faraday Society. London: The Faraday Society. Pp. 368. 10s. 6d. net.

The Calendar

Mar. 14	Institution of Petroleum Technologists: Address by Professor J. S. S. Brame. 6.30 p.m.	John Street, Adelphi, London.
15	Society of Glass Technology: Meeting, 2.30 p.m.	Stourbridge.
15	King's College Public Lectures: "The Quantum Theory of Radiation and the Constitution of the Atom." N. Bohr. 5.15 p.m.	King's College, London.
16	Society of Chemical Industry, Bristol and South Wales Section: Annual General Meeting and Chairman's Address. 7.30 p.m.	Bristol.
16	Society of Dyers and Colourists, West Riding Section: "A Synthesis of Glycerine and a Novel Chemical Reaction." L. G. Radcliffe and H. G. Shatwell.	Leeds.
16	The Chemical Society: Papers by H. B. Baker, and H. Burton and J. Kenner. 8 p.m.	Burlington House, Piccadilly, London.
17	Society of Dyers and Colourists, Manchester Section: "Further Observations on the Behaviour of Oxidised Cellulose," E. Knecht and F. P. Thompson; "A New Protective Agent for Animal Fibres." A. Edge. 7 p.m.	36, George Street, Manchester.
17	Sir John Cass Technical Institute: "Recent Developments in the Glass Industry." Lecture IV. W. E. S. Turner and S. English.	Jewry Street, London.
	Royal Institution: "The Pigments and Mediums of the Old Masters." A. P. Laurie. 9 p.m.	Albemarle Street, London.
18	Royal Institution: "Radioactivity." Lecture III. Sir Ernest Rutherford. 3 p.m.	Albemarle Street, London.

More "C.A." Snapshots at the British Industries Fair



Some Character Studies: Specially drawn for the "C.A."

The British Industries Fair of 1922

Parliamentary and Trade Opinions on the Chemical Exhibits

THE Chemical Exhibition at the British Industries Fair in London followed during the second and concluding week the course roughly indicated as probable in our last issue. The attendance gradually improved; the public interest increased; there was a steady dribble of visiting buyers and at times a real flow of inquiries; the actual business booked in some cases is quite considerable.

The exhibitors themselves may be too much immersed in their own immediate interests to be the best judges of the broad effects of the exhibition, but their testimony is valuable. To ascertain something of their experience, we issued to a number of firms a simple form of inquiry containing the following four questions:

1.—Has the Chemical Exhibition in your opinion justified its organisation?
2.—What results has it produced in inquiries, actual business, or otherwise?
3.—Has it helped the policy of establishing an independent British Chemical and Dyestuffs Industry?
4.—Are the chemical exhibits fairly representative of the progress made during and since the war?

We give below a selection of typical replies:

W. J. BUSH & CO., LTD.

1.—Yes. An exhibition of this sort was wanted as a stimulus to trade, and we believe that the impetus which it is giving to business will have justified it completely.
2.—Mainly inquiries. The results in actual business cannot be ascertained as yet. We regard the exhibition more as a means of making our products known than of obtaining immediate results.
3.—The establishing of an independent chemical industry in this country is certainly promoted by making widely known the increasing range of products made by British firms. The co-operating influence of the Association of British Chemical Manufacturers has been very useful in this direction.
4.—Yes. As far as our experience goes, most of the advances in the technical production of fine chemicals are represented. Our own exhibit shows a largely increased series of products.

R. C. FARMER, Director.

SOUTHDOWN CHEMICAL CO., LTD.

1.—Yes.
2.—A fair number of inquiries have been received, while some orders have been booked from regular consumers. Interest has been shown in our new productions, while the Fair has enabled us to restart two of our intermediate processes.
3.—Decidedly yes. The consumer has had the opportunity of comparing the great strides made by the home producers under adverse circumstances during the last year, while individual manufacturers have had a unique opportunity of comparing notes and exchanging ideas with their competitors.
4.—Fairly so, in our opinion, but probably a much larger show could have been organised if the general state of trade had been more normal.

GRAYS DYES AND COLOURS, LTD.

1.—From every point of view "Yes."
2.—Definite orders have been booked for immediate and forward delivery. The exhibition has been of great importance in so far as it has introduced our recent manufactures, viz., alizarine and chromium compounds, to many people who were not familiar with our activities.
3.—It has undoubtedly shown from a practical point of view the enormous progress that has been made in the manufacture of dyestuffs, many firms having taken the opportunity of the "slump" to give careful attention to the successful production of many useful and interesting commodities.
4.—Yes.

HICKSON & PARTNERS, LTD.

1.—We do not expect to be in a position to reply to this question until propaganda has had time to produce results.
2.—Inquiries in excess of those last year at Glasgow; actual business not so voluminous as expected.
3.—It is difficult to say at present, but should think the Fair to be in its favour.
4.—Yes.

A LONDON FIRM OF CHEMICAL MANUFACTURERS.

1.—Although no large volume of actual business has passed, inquiry has been good.
2.—Too early to supply any definite information.
3.—It would appear to have instructed many people that they can obtain chemicals of English manufacture, for which they have previously gone abroad.
4.—Each exhibitor would naturally see that his exhibit indicated the progress that his firm had made.

Most of the replies are in much the same vein, varying only in the degree of approval expressed. Only one definitely unfavourable reply has been received—that from J. F. Macfarlan & Co., who state without qualification that in their opinion the exhibition has not justified its organisation and that the net result of it is "very little."

Business Done

With respect to the actual business done in the exhibition, it is premature to attempt anything like a complete return. A number of exhibitors have expressed surprise at the volume of orders taken as a direct result of the Fair. Some firms have taken several very sizeable orders, while trial orders which should develop into substantial ones later on have been fairly general. Almost without exception exhibitors have received a large number of inquiries, a fair proportion of these coming from foreign buyers. One exhibitor, while expressing surprise at the amount of business he had done, thought that there had been a tendency on the part of foreign buyers to keep back their actual orders with a view to possible improvements in the parity of exchange rates.

In this connexion the testimony of the visitors' book at the Overseas Buyers' Club is not without interest. A glance through the pages reveals the signatures of chemical buyers from Berlin, Switzerland, Nairobi, Spain, India, Holland, Dutch East Indies, Japan, Australia, and South and North Africa.

As regards general interest, no previous chemical exhibition can for a moment be compared with it. The sense of its purely educational value early led to a suggestion that it should be thrown open to the public. This view is expressed in the following letter received from one of the exhibiting firms:

"SIR,—We think it would be a great pity if such a fine exhibition of what the British manufacturer can accomplish should be closed at the end of next week without some opportunity of seeing it being given to the general public. We do not know what the other exhibitors may wish, but for ourselves we should be very pleased if those who are interested in British manufactures could see the present exhibition at Shepherd's Bush. If a small charge (say 6d.) could be made from four to six each evening (by which time the buyer is thinking of going home), and the proceeds given to the hospitals, we believe many would be delighted with the Fair, and as a result many beds would be reopened which are now closed. We are, &c.,

For Stafford Allen & Sons, Ltd.,
W. F. MERRITT, Director.

Cowper Street, Finsbury, E.C. 2, March 2.

This point had not been overlooked by the organisers; in fact, it had been considered with some care. The chief difficulty is that about two-thirds of the total body of exhibitors are opposed to the idea. On the other hand, it is pointed out that the Fair is more than a strictly trading

concern. It is a demonstration of what British firms have accomplished under very difficult conditions, and since both the dyestuff and the fine chemical industries are the subjects of legislation, and are almost constantly the subject of inquiry in Parliament, they have a public as well as a scientific and commercial side to be considered. From this point of view it is put very strongly from some quarters that the public should have an opportunity of seeing and judging of the important work done. Incidentally, the admission of the public would help the finances, and to that degree would undoubtedly be welcome to the officials.

Two suggestions have been made for meeting the difficulty. The first is that next year the chemical exhibits should be divided into two classes—those suitable for public inspection and those to be confined to the trade. The second is that the present exhibits should be removed to another hall on the conclusion of the Fair, and should remain open to public inspection for a week or so. Whether this course is possible this year is at the moment uncertain. But undoubtedly public interest has developed to such an extent that some arrangement should be made next year for recognising the public aspects and claims of the exhibition.

In regard to the hours of opening more than one exhibitor was of the opinion that the closing hour was too early. They thought that if the time could have been extended to 7 or 8 p.m. many more technical men who were employed during the daytime could have visited the exhibition. It was also pointed out that the number of visitors during the first two hours of the day has invariably been small, and that it would have been better to open the Fair from 12 to 8 p.m.

As an example of the keen interest among exhibitors, an official of the Overseas Trade Department informs us that he was asked on Wednesday by a chemical exhibitor how soon he could apply for space for the 1923 Fair, as he would require a stand much larger than the present one.

M.P.'s Visit to the Chemical Section

The principal event of the week was the visit on Wednesday of a large party of members of Parliament, who attended as the guests of Mr. W. J. U. Woolcock, M.P., general manager of the Association of British Chemical Manufacturers. The immediate purpose was to afford the members an opportunity of seeing for themselves the progress of the British dyestuff and fine chemical industries, and the following accepted invitations :—

Mr. R. Armitage, Colonel W. Ashley, Mr. F. N. Ashley, Mr. A. K. Atkey, Major H. Barnes, Mr. A. R. Barrand, Sir A. Shirley Benn, Mr. H. B. Betterton, Captain G. E. W. Bowyer, Sir H. Brittain, Sir E. A. Brotherton, Mr. T. T. Broad, Mr. W. T. Carr, Sir R. Burton Chadwick, Sir Richard Cooper, Lieut.-Col. P. T. Dean, Major A. C. Farquharson, Mr. R. Gee, Mr. J. D. Gilbert, Colonel J. Greig, Major C. G. C. Hamilton, Mr. Arthur Henderson, Mr. Percy Hurd, Mr. G. H. Jones, Mr. J. Towyn Jones, Mr. A. J. Law, Mr. J. Long Sturrock, Mr. J. W. Lorden, Sir Philip Magnus, Sir W. Pearce, Mr. W. G. Perring, Lieut.-Col. A. Pownall, Mr. N. Rae, Mr. H. B. Ratcliffe, Sir W. Seagar, Mr. T. Shaw, Mr. R. Waddington, the Right Hon. J. W. Wilson, and Sir H. Kingsley Wood.

In addition to these there were also present Sir William Alexander, Sir William Clark, Mr. Percy Ashley, Colonel Cole, Mr. Claude Taylor, Mr. Braddock, Mr. J. Fielding, Mr. G. J. Alderton, Mr. A. J. Malacrida, and others.

The guests were received by Mr. Woolcock, and they spent over an hour in the chemical section. Without exception they were extremely interested, and the effect was even better on those in some degree familiar with the industry than on those who were purely laymen. Some regret was expressed that the party did not include more members of the Parliamentary group who have specialised in the criticism of the Dyestuffs and the Safeguarding of Industries Acts. Several of the exhibitors were particularly anxious that these members should see the actual products of British concerns, and to have an opportunity of answering any inquiries and offering explanations. It was in some ways a pity they did not attend, as it left the impression on some of their colleagues that they might be shrinking from the actual evidence available. How enlightening the process of discussing points of difficulty at close range may sometimes prove was shown by a significant incident which occurred when the party were inspecting the exhibits of the British Dyestuffs Corporation. Mr. Tom Shaw, a Lancashire Labour member, put quite bluntly an objection which has probably been freely used in opposition to the Dyestuffs Act. Taking the case of Helio, a dye very largely used in the production of zephyr fabrics in the Colne Valley, he remarked that it was deficient in fastness and was liable to run, thus damaging the reputation of the trade of the district. Here was a direct challenge, and it was promptly met. Sir William Alexander happened to be present when the inquiry was made, and he at once consulted the company's technica experts. The result of the inquiry was to show that the British Dyestuffs Corporation had never made or marketed the dye in question, and that defects of probably a foreign product had been erroneously used to discredit British work. Mr. Tom Shaw seemed a little disillusioned, while his Parliamentary colleague, Mr. R. Waddington, seemed correspondingly pleased with the discovery of a very effective platform point.

Some Complimentary Speeches.

From the Chemical Section the party proceeded through the rest of the Exhibition, and the good impression formed at the outset was everywhere confirmed. Finally in the pleasant quarters of the Overseas Buyers Club, the members lunched together, and before separating listened to a few informal speeches. First of all, Sir William Pearce, as the "member for chemical industry," expressed on behalf of the visitors their appreciation of the pleasure and profit they had derived from the morning's visit, and their satisfaction at the remarkable progress which had obviously been made in the production of British dyestuffs and chemicals. While everyone was anxious to effect all possible economies, he felt that the Department of Overseas Trade was one of the most energetic and efficient of Government Departments, and anyone who had seen the Exhibition would be forced to the conclusion that it was thoroughly justifying its existence. Sir William Seagar added a few words of congratulation to the Department, and offered the thanks of the guests to Mr. Woolcock for the great trouble he had taken in explaining the points of interest to the visitors. Mr. Woolcock, in reply, remarked that although they heard little in these days but the noise of the grinding of the axes, he thought the Overseas Department, by all who really knew its work, was regarded as a valuable and efficient aid to British industry. Connected as he was with the chemical industry, it was gratifying to note the success of the chemical section this year, and to hear of the favourable impression produced on his Parliamentary colleagues by what they had seen that morning. Sir William Clark, on behalf of the Department and his official colleagues, expressed his appreciation of the favourable terms in which their work had been referred to, and their desire to serve British industry in every way possible. This year's show was distinctly the best which had been organised, and as compared with the rather pessimistic tone which prevailed last year, the increased confidence of the business community this year was most encouraging.

We understand that it was the intention of Sir P. Lloyd-Greame, M.P., the Parliamentary head of the Overseas Trade Department, to have been present on the occasion, but that he was prevented by a domestic bereavement.

Some Personal Opinions

During the visit some interesting personal impressions of the chemical section were given to a representative of THE CHEMICAL AGE.

Mr. R. Waddington, M.P., remarked that the chemical section had produced a distinctly favourable impression on all who had inspected it. It was essential, he pointed out, that we should be able not only to produce good dyes, but to produce them at an economic price as compared with foreign dyes. He had made particular inquiries as to prices, and had been agreeably surprised to find that we compared so favourably with Germany. Taking one dye, he found that while the 1914 German price was 9s., the British price to-day was 11s. In another case the corresponding figures were 3s. and 6s. In the textile trade they thought they were not doing badly if they were able to buy at about double the pre-war figure.

"The textile trade," Mr. Waddington added, "is really anxious that these new industries should make good, as we have no desire to be solely dependent again on foreign sources. The importance of an independent industry is very well illustrated by the case of alizarine dyestuffs, an industry which would have passed out of existence but for the determination of the calico printing interests to maintain the industry at all costs, and as a result, instead of being at the mercy of German firms, the Germans have been forced to enter into a convention with British makers as to prices, &c. It seems only fair that the British dye-producing concerns should have a fair chance of producing the goods needed to save the textile trade from being once more at the mercy of German producers. The effect of our visit to-day has been most encouraging. Among the people responsible for these important industries there seems to be a manifest determination to succeed, on both the commercial and the scientific sides, and it is a pity that any agitation should be fostered in this country to obstruct so excellent a movement at this early stage."

Mr. J. W. Lordon, M.P., remarked:—"I have no technical knowledge of the dyestuff and chemical industries, but so far as an outsider can judge, the exhibition is most encouraging, and it was rather a revelation to me to know how much is already being produced in this country."

Sir E. A. Brotherton, M.P.: "I think the chemical exhibition excellent in every way, and the exhibits have been presented in the most interesting way. It constitutes reassuring evidence that British manufacturers, when they choose to exert themselves, can still hold their own against competitors of any other country either in quality or in productiveness. My impression is that if buyers came here they would be very favourably impressed."

Sir William Seagar, M.P.: "I have been greatly impressed with the whole exhibition, particularly with the chemical and dyestuff section. The latter exhibits the wonderful production which has been developed in this country during and since the war, and the progress made in supplying ourselves with national essentials for which we formerly relied mainly on Germany. Although I have been a Free Trader all my life, I am more than ever convinced of the necessity of the measures for the safeguarding of our new key industries which have been passed by the Coalition Government. In one case alone I know of 1,100 people being employed in such industries who would not be employed to-day but for these Acts. It is a national duty to support such industries, with, of course, the least possible burden on the consumer; and I can only say that what I have seen to-day of British chemicals and dyestuffs has impressed upon me the importance of these industries and the wonderful advances they have made in the past few years."

Further Notes on the Chemical Exhibits

We give below short notices relating to exhibits in the chemical, scientific instruments, and glassware sections of the Fair

J. B. & W. R. Sharp, Ltd.

The photographs of stands published on another page include that of J. B. & W. R. Sharp, Ltd., Edenfield, Lancashire, which was mentioned last week and which is one of the most interesting and attractive exhibits. At the back of the stand is a showcase containing, in addition to a range of samples, an effective design of a star, artistically carried out in ribbons dyed with a selection of the firm's colours and illustrating their registered trade mark "Stella Dyes," while the walls are hung with piece goods dyed in various shades of exceptional beauty and brightness.

Messrs. Sharp were one of the first firms in this country to lay down plant for the production of nigrosines on a large scale, and this section of their business is well represented on the stand. Fast Light Yellow, Methyl Violet and Methylene Blue, equal in all ways to the similar offerings of our ex-enemy competitors, are especially noticeable, and a velvet curtain dyed with Azomine Fast Pink, one of the firm's new products, is of a strikingly beautiful shade.

The general effect is enhanced by a Sheringham Daylight Lamp which forms part of the equipment of their laboratories and emits a light identical with artificial daylight, thus showing the colours in their true shade and permitting of accurate matching by artificial light. Messrs. Sharp were the first exhibitors in the Fair to appreciate the advantages of this system of illuminating their stand, and it remains the only one solely lighted in that manner.

Southdown Chemical Co., Ltd.

Another stand represented in our photographic group is that of the Southdown Chemical Co., Ltd., the main feature of which is the illuminated design of their registered trade-mark, the Naphthalene Ring, standing out against a velvet background. A number of their leading colours are seen in solution form, showing their entire absence from insoluble matter. These colours are based on the naphthalene ring. The company are among the comparatively restricted class who can state that they produce their own colours from the raw material to the finished dyestuff. They are showing their series of "Benzarene" (direct) cotton colours, "Naphtharene" (Acid) colours, "Neochrome" after-chrome colours, and "Phorochrome" dyes for the Metachrome process.

H. Allnutt & Son

Filter papers of all kinds are shown in the stationery section by H. Allnutt & Son, of Maidstone. Their Class "B" and "C" double and single-washed papers have the ash stamped on the back, while in the fat-extracted papers, the remaining fats that can be extracted in a Soxhlet for three hours are also shown. A new departure in laboratory papers has a rough creped surface, and is said to be very fast. Other papers include the nitric acid toughened, for use with a filter pump, parchmentised membranes for dialysis and colloidal work, and Gooch crucible circles.

British Alizarine Co.

Since our first review of the exhibits of the British Alizarine Co., Ltd., two instructive specimens have been added to the stand. One is a collection of skeins of wool dyed by the company and exhibited at Glasgow in 1880. A card placed in front of the wool explains that although these specimens have been exposed to bright light for forty-two years they have undergone no change in colour. A piece of red-dyed cotton exhibited at Leeds in 1888 is also shown.

British Cellulose and Chemical Manufacturing Co.

A new British-made material for use in the manufacture of fancy goods, windscreens, electric light fittings, &c., is shown at the stand of the British Cellulose and Chemical Manufacturing Co., Ltd. Known as "Celastoid," it is supplied in sheet, rod, and tube form in transparent, ivory, tortoise-shell, amber, marble, or opaque colours.

Hickson & Partners

Hickson & Partners, Ltd., have lately devoted much time and expense to the production in bulk of para-rosaniline base, and show dyeings on wool and silk of the eight B shades of alkali blue and soluble blue now produced, it is stated, for the first time in this country. A series of intermediate compounds, nitro and amido compounds of benzene, toluene and xylene are also shown, including mirbane oil, aniline oil and para-nitro-ortho-toluidene (scarlet developer for naphthol A.S.).

Brown & Son

In the Scientific Section Brown & Son, of Holloway, London, show a varied collection of their manufactures, the most novel of which is a bomb calorimeter which they have just placed upon the market. Autoclaves fitted with the firm's patented self-sealing cover, which obviates the use of bolts and nuts, figure prominently in the display. Another interesting exhibit is a patent combined still, oven, and evaporating fan which has been specially designed for research and other laboratories where a variety of small drying and concentrating operations are frequent. The top, forming the evaporating bath, is fitted with five 2½ in. openings with covers; eight openings, each of which is fitted with a set of concentric rings varying in diameter from 8 in. to 2 in.; a shallow sand bath; and three conical openings for drying funnels, &c. The firm manufacture all classes of steam pans, vacuum stills, condensers, Soxhlet extractors, drying cupboards, emulsifiers, &c., in copper, steel, and enamelled iron.

Bennet Furnishing Co., Ltd.

Although it is situated in the Furniture Section, the stand of the Bennet Furnishing Co., Ltd., of Peckham, London, is of interest to chemists on account of the laboratory furniture shown there. One of the exhibits is a laboratory bench, the wood top of which is treated with a special acid-resisting compound discovered by the firm. A supply of various acids is kept in order to demonstrate the properties of the bench top. The sink is situated at the back of the bench and takes the form of a trough running from end to end. Ample cupboard room is provided.

John Dowell & Sons

John Dowell & Sons (Glass Bottle Manufacturers), Ltd., have an extensive display of plain and stoppered bottles for the chemical, perfumery, and other trades. Many of the bottles, which are supplied in a variety of shapes and sizes, are made on automatic machines.

Adam Hilger, Ltd.

Adam Hilger, Ltd., who have two stands, show optical and other scientific instruments for research and for the control of industrial processes. These include polarimeters, saccharimeters, spectrometers, spectrophotometers, refractometers, colorimeters, and interferometers. Of particular interest to glass manufacturers is their apparatus for determining the annealing temperature of glasses and for controlling the process of annealing. Apparatus for testing glassware for defective annealing is also shown.

James H. Dennis & Co.

Sulphate of copper is the predominating feature of the stand of James H. Dennis & Co., Ltd., manufacturers of the "Macclesfield Crown" (98/99 per cent.) copper sulphate. The front portion of the stand is largely occupied by an enormous crown made of sulphate of copper crystals, while bottles containing this substance are displayed on either side. Crystals are also employed in a sign which covers the inner walls of the stand. Pamphlets describing its application in agriculture are distributed from the stand.

United Glass Bottle Manufacturers

The familiar slogan, "Use Good Bottles," plays a prominent part in the decoration of the stand of United Glass Bottle Manufacturers, Ltd. An extremely large stand, it contains bottles of all kinds in every conceivable shape and size. A stand containing a collection of bottles made on the Owen's automatic machines is one of the most interesting portions of the exhibit, illustrating, as it does, the scope and adaptability of these machines. Winchesters and carboys are included in the display. The company, which claims to be the largest bottle manufacturing undertaking in Europe, is at present capable of making 250,000,000 bottles per annum.

J. F. Macfarlan & Co.

Alkaloids of all descriptions, and anæsthetics and fine chemicals for pharmaceutical purposes are shown by J. F. Macfarlan & Co. The firm specialise in anæsthetics, which they claim to supply at about one-third of the cost of those made from ethylic alcohol. Among their chief products are diacetyl morphine hydrochloride, ethyl morphine hydrochloride, salicin, and cotarnine hydrochloride. They were, they state, the first manufacturers to produce codeine in white prismatic crystals. Apomorphine hydrochloride was also first prepared on a commercial scale by the firm, who state that they are at the present time the sole British manufacturers of this product. It is interesting to note that as long ago as 1888 they were making diacetylmorphine hydrochloride and ethylmorphine hydrochloride, which German manufacturers copied under the trade names of heroin and dionin.

Marley Hill Chemical Co.

The Marley Hill Chemical Co., Ltd., of Newcastle-on-Tyne, who specialise in foundry coke and pitch, display samples of these products, in addition to sulphate of ammonia and neutral sulphate, ammoniacal liquor, sulphuric acid, pure anthracene, anthracene oil and paste, benzene, sal-ammoniac, pickling creosote, heavy solvent naphtha, toluol and crude benzol.

John Moncrieff, Ltd.

John Moncrieff, Ltd., of Perth, have a large display of laboratory glassware, gauge glasses, and miners' lamp glasses. The exhibit includes "Unific" and combustion test tubes and samples of tubing and rod (soda resistance and combustion).

Necol Industrial Collodions

Necol Industrial Collodions, Ltd., the proprietors of which are Nobel Industries, Ltd., display their "Necol" preparations. These include cements, enamels, lacquers, &c., and plastic wood, which can be used for filling up holes in wood and for a variety of other purposes. Shortly after it has been applied the plastic wood becomes intensely hard and is capable of taking paint or polish.

James Powell & Sons

Normal glass tubing, which the makers claim to be superior to that made at Jena, is shown by James Powell & Sons (Whitefriars), Ltd., who also specialise in the manufacture of lens-front thermometer tubing. Turned and bored glass cylinders for pumps for corrosive liquids, specimen jars, ampoules, &c., are also shown.

W. A. Webb, Ltd.

At the stand of W. A. Webb, Ltd., are to be seen scales and balances of all kinds. These include chemical and analytical balances, dispensing and laboratory scales, balances for precious stones, &c.

Ajax Aniline Dye Manufacturing Co.

The Ajax Aniline Dye Manufacturing Co., who make a speciality of colours for leather, have an interesting show of materials dyed with their direct, acid, basic, and sulphur colours. They also manufacture oil and spirit soluble colours, H acid, Gamma acid, and other intermediates.

"Elel," Ltd., Eleanor Road, Woolwich, London, show lavender and eau de Cologne soap. J. G. Ingram & Son, Ltd., of Hackney Wick, London, display their manufactures of mechanical rubber goods. B. L. & N. Phillips, Ltd., of 124, Southwark Street, London, show their range of disinfectants and preparations for the destruction of vermin.

Joseph Watson & Sons, Ltd., of Whitehall Soap Works, Leeds, have an attractive array of their household, toilet, and other soaps. J. B. Wilkinson, of Dudley Hill Chemical Works, Bradford, show heavy chemicals for the textile leather, rubber and other industries. They specialise in sulphites, sulphides, bisulphites and metabisulphites of sodium. Wood charcoal, acetic and pyroligneous acids, miscible and solvent wood spirit, wood tar, &c., are shown by Wilson Brothers Bobbin Co., Ltd., of Cornholme Works, Garston, Liverpool, who also show acetates of lead, lime, aluminium, &c.

Is Lactose a Fine Chemical?

Another Inquiry Opened

At the offices of the Board of Trade on Saturday, March 4, Mr. Cyril Atkinson, K.C., the Referee under Part I. of the Safeguarding of Industries Act, opened an inquiry into an application by Allen & Hanbury, Ltd., with regard to the inclusion of refined lactose in the list of goods issued by the Board of Trade under the Act. The firm asked that lactose R, as it is named in the list, should be removed. Mr. J. Hunter Gray, K.C., and Mr. Trevors Watson appeared for the complainants, and Mr. Whitehead for the Board of Trade; there were no outside parties in opposition.

Mr. J. Hunter Gray, in opening the case for the complainants, said that lactose was one of the essential constituents of milk. Lactose began in the milk as lactose and finished as lactose, no chemical change taking place. Cane sugar was not in the list issued by the Board of Trade, yet the Board, in a statement they had put in, included lactose both as a chemical and as a fine chemical. The reasons were mentioned in a counter-statement to the complainants' case as follows:

1. (*a*) Lactose as listed by the Board is prefixed by the letter "R"; (*b*) crude yellow lactose as ordinarily prepared from the by-product "whey" is not dutiable.

2. R Lactose is a chemical by reason of: (*a*) Its constant molecular composition; (*b*) its having been "prepared" to a substantial extent; (*c*) its being generally and primarily used for its intrinsic and characteristic "chemical" properties as distinct from any physical properties it may have; (*d*) its chemically reactive properties.

3. R Lactose (whether bacteriological or B.P.) is a "fine chemical" by reason of: (*a*) Its preparation being a matter of very considerable chemical difficulty, requiring most careful chemical and bacteriological supervision under conditions of particular mechanical and bacteriological cleanliness. Its preparation is also carried out in typically "fine chemical" plant; it involves tests of the raw material to ascertain the correct proportions in which the various reagents should be added; separation of colloidal, metallic and other impurities; decolourisation; and vacuum evaporation treatment; (*b*) its purity; (*c*) its preparation and its handling for sale, and its use in small batches.

The Complainants' Case

Mr. F. W. Gamble, director of Allen & Hanbury, said the lactose his firm used was as to 90 per cent. for infants' food; the other principal, though small, use being for subdividing potent drugs and as a food for bacteriological media. The firm in Holland with which he did business was the Milk Sugar Works of Amsterdam; whilst in America the supply came from the Sheffield Farms. His firm claimed to be the largest users of lactose in this country, and as far as he understood the manufacture there was nothing in it to call for skilled chemical supervision of such a nature as would constitute it a fine chemical. It would be splitting hairs to call lactose a chemical and not cane sugar.

Mr. E. J. Parry, analytical chemist, said he did not think lactose could be called either a fine chemical or a chemical at all. It was a foodstuff and did not differ from sugar, starch, or even bread. There was no definition of the word "chemical" that he knew of that would include lactose and exclude starch or sugar, and all the conditions which were put forward in the Board of Trade's counter-statement applied equally to starch or sugar, although they were not in the list.

The Referee, who had been handed a copy of Mr. Parry's book on "Food and Drugs," said he had a shock when he noticed that santonine was given as a fine chemical, having regard to the decision in the santonine case.

Mr. Parry, amid some laughter, explained that he was not aware that santonine was mentioned in that book when he gave evidence in the santonine case, but there was no other place for it in that particular publication.

Mr. Corneles Merinus Dhont, director of "N. V. Hollandsche Melksuikerfabriek," said his firm had two factories, one at Uitgeest, near Amsterdam, and the other at Sains du Nord, France. The process of extracting the lactose from the milk was carried out continuously night and day, and at each factory there were two analytical chemists who had previously been in a sugar factory where they made cane sugar. These chemists made the analytical tests in the laboratory. During the night-time none of the chemists were on duty, the only supervision then being that of the foreman, who was capable of making the same kind of analytical tests as the chemist. He was inclined to think that the machinery required for lactose was more complicated than that required for the manufacture of cane sugar. Dealing with the process, the witness said there was no difficulty in making the proteins or albuminoids in the whey insoluble, nor in getting rid of them when they had been made insoluble. The addition of acid made them insoluble and the filter press was made use of to get rid of them, and that was merely a mechanical process. The mineral salts were got rid of at the same time as the protein matter. The process took about eight hours to complete in order to make crude milk sugar, and the refining took place on the next day, so that it took about two days altogether. The refining was merely recrystallisation.

Asked when he had heard lactose called a fine chemical, the witness said that he had never heard it called a fine chemical before he came into the room that morning.

Mr. Philip Blenkinsop, director of May & Baker, Ltd., manufacturers of chemicals, chemical substances, and pharmaceutical preparations, said he did not exactly know what a pharmaceutical preparation was. Presumably what was meant was a preparation supplied to pharmacists. So far as he was aware, lactose had never been regarded as a fine chemical in the trade nor as a chemical at all. Generally speaking, and to his knowledge, there was no industry for the manufacture of lactose in this country.

Board of Trade Evidence

Mr. John Christopher Stead said he was a Fellow of the Chemical Society and a member of the Society of Chemical Industry, and was in charge of the factory which the Ministry of Agriculture had built to manufacture lactose. Before taking on this work he had been engaged for ten years in the manufacture of fine chemicals. Describing his process for the manufacture of lactose, he said he received the whey from the cheese factory, subjected it to a certain temperature, and separated the residual butter and fat. The acidity of the whey was then tested, and if it were about correct it was heated to 200°F. This precipitated the bulk of the lac albumen—*e.g.*, the whey was passed through the filter press, which separated the lac albumen, the clear liquid being further neutralised, from which was obtained a further precipitate of albuminoid. The liquid, after being neutralised, concentrated to the crystallisation point and the crystals were centrifuged and dried. This gave crude lactose, which was subjected to further crystallisation in order to get the refined product. When the factory started he had four men and four women, and he still had them, but there was no other chemist besides himself, although he would shortly be wanting one. The whey was obtained from one source, but even then it could not be relied upon to have a constant quality, and it was necessary to ascertain the quality of every consignment by means of a titration test. During the process of manufacture tests were continually made both before the coagulation process and afterwards. Later he estimated the amount of nitrogen to see how much albuminoid was left in the final product. From his former experience he was of the opinion that lactose required infinitely more careful supervision than did the manufacture of many fine chemicals. The batch he employed was 1,000 gallons, which would be a small quantity for a heavy chemical. At the same time, they would not use such a large batch in fine chemical manufacture; in the case of potassium iodide, for instance, the batch was 300 to 400 gallons. He considered lactose R a fine chemical. He hoped to run a night and a day shift at his factory very shortly. The Ministry of Agriculture had spent several thousands of pounds upon the work which he had in hand and to which he was giving his whole time in an endeavour to find a means of utilising the large amount of whey now going to waste in different parts of the country.

Mr. C. Dampier Whetham, F.R.S., Fellow of Trinity College, Cambridge, and author of a book on the theory of solutions, said that he regarded himself as a chemical physicist rather than a physicist with chemical interests. He said that he had a small farm of his own and was contemplating the

erection of a factory to deal with the whey from that with a view to developing the process of manufacture on rather different lines from the ordinary process. His experience was that in order to obtain the best coagulating effect it was important carefully to measure the right proportion of alkali, and these measurements should be carried out by a chemist. In this he was speaking from his laboratory experiments, as his factory was not yet working, the delay having been due to the inability to obtain certain apparatus. His chemists, however, had been carrying out certain laboratory tests. Having tested the lactose he had already prepared, and having sent it to other people, he was satisfied that it was a perfectly definite chemical compound. Its structural formula was given in the text books. Asked as to whether he had formed any opinion whether lactose was a fine chemical, Mr. Whetham said it was for the Referee to decide that, but until he heard of this inquiry it had never crossed his mind whether lactose was a chemical or a fine chemical. He was not an expert in trade terms and he should be sorry to express any view.

MR. WHITEHEAD here handed in figures of imports for 1920. The total quantity of lactose imported was about 400 tons, and it came from Germany, the Netherlands, the United States, and some other countries. Apparently the Netherlands were the greatest exporters because they sent, roughly, one third.

MR. ALFRED SIEBOLD, chemist to the Lactose Milk Sugar Co., whose works are at Tipperary, Ireland, said that manufacture of lactose had been carried on there since 1913, and he had been in charge of the works since they were started. The original proprietors of the works, he said, had experimented in Somersetshire before commencing operations; he himself had had laboratory experience as a consulting chemist, and there was a good deal of experience to guide them in the manufacture of lactose. Prior to taking up this work he had been engaged in the manufacture of natural colouring matters, and it was because of that experience that he got the post of chemist to the Lactose Co., the directors thinking he would be likely to have a knowledge of the plant required. So far as the use of the plant for other purposes was concerned, it could only be used for so-called pharmaceutical chemicals and would not lend itself to heavy chemical manufacture. He found it necessary as a chemist to watch very carefully what was going on if the business was to pay, because serious difficulties were often encountered in getting rid of the albuminoid content of the whey, and it would not be desirable to have the work in charge of anyone who was not a chemist. Asked whether lactose was a chemical, the witness said that he had not thought of it much prior to twelve months ago, but he would now regard B. P. lactose as a chemical or a fine chemical.

THE REFEREE: Did you ever advertise yourselves as manufacturers of fine chemicals?

MR. SIEBOLD said "No," but after his experience in the manufacture of lactose he should regard himself as fully qualified to manufacture fine chemicals.

The closing speeches were then made, first by Mr. Whitehead on behalf of the Board of Trade, and then by Mr. J. Hunter Gray, on behalf of the applicants.

During the course of the speeches the Referree asked if it could be thought that the Legislature, in passing the Safeguarding of Industries Act, contemplated such things as sugar and starch coming within the meaning of the word "chemical," and if the word should have such a broad meaning as to include foodstuffs.

MR. WHITEHEAD submitted that that view could be taken, with certain limitations. For instance, saccharine was regarded as a chemical.

MR. J. HUNTER GRAY doubted whether anyone, except for the purposes of an inquiry under the Act, would ever have regarded a food as a chemical. On the contention of the Board of Trade, if lactose was a chemical, then distilled water, sugar, and starch must also be regarded as chemicals, and he submitted that it was making a farce of the word "chemical" and giving the Legislature credit for no common sense if it were suggested that Parliament really intended this.

The Referee will give his decision later.

"Father" of the L.C.C.

SIR JOHN BENN, chairman of Benn Brothers, Ltd. (proprietors of THE CHEMICAL AGE), has been re-elected a member of the London County Council.

The Nitrate Position

German Production of Synthetic Nitrogen

IN their monthly report on nitrate of soda, Henry Bath & Son, Ltd., state that deliveries of nitrate of soda from European ports during February amounted to about 146,000 tons, against 135,000 tons during the same month last year. The total would have been larger had not the German railway strike and the icebound condition of Central and Northern Europe interfered with transport facilities. The German railway situation still seriously hampers the free movement of nitrate from Hamburg. Throughout the second half of February, the report states, the demand in Europe has been good, and the hesitation referred to in the last report disappeared under the influence of steadier prices. At the close the nearest quotations for early delivery are the parity of £13 7s. 6d. to £14 5s. per ton, according to locality and conditions of exchange. Pool sales in February will doubtless exceed 100,000 tons, a very welcome feature being the disposal of round quantities for German and Russian consumption. Poland (without resort to barter) and Czecho-Slovakia have also bought moderate quantities, and it is expected that all these countries will absorb further lots in the near future, though possibly not quite on the scale pictured by the somewhat sensational rumours of the last few days.

German Importation and Production

While it was expected for some time past that Germany would require more nitrogen, it was feared that the depreciated value of the mark might present insuperable difficulties to the importation of Chilean nitrate, and as a matter of fact it was only after negotiations to exchange early nitrate against later deliveries of German synthetic sulphate had broken down that an outright purchase of the Chilean fertiliser was carried through. During the negotiations for exchange 100,000 tons was the quantity under discussion, but as a matter of purchase instead of exchange such a figure can, at least this year, hardly be realised. However, a consolation of much importance to the Chilean nitrate industry is the German Government's recent action in withdrawing the prohibition of import and so opening the door to the re-establishment of a free market. The German production of synthetic and by-product nitrogen for approximately twelve months to date is estimated in terms of sulphate of ammonia at not far short of 1,500,000 tons, and would, of course, have been correspondingly larger still without the Oppau explosion. The amount exported seems to have been very small, and it would therefore appear that practically the whole of this quantity has been absorbed internally. Even so, production is hardly keeping pace with demand, and, as costs will rise materially with the pending enactments of the Government affecting coal and wages, the outlook for Chilean nitrate in Germany is becoming a good deal brighter. The pre-war consumption there of nitrogenous fertilisers was round about 1,000,000 tons.

Sulphate of Ammonia

Another contributing cause of the better prospects for nitrate this spring is the phenomenal change in the world position of sulphate of ammonia, the price of which on the Continent is now about £20 per ton, and somewhat nominal even then. This situation extends also to America, where, after business done not so long ago for export, there is said now to be also a shortage. Nitrate stocks on the Continent are likely in some places to require rearrangement, and transhipments from Belgium, which is somewhat overstocked, will probably be made to other points.

A parcel by liner due to arrive was sold early in February at about £13 per ton c.i.f., and nitrate in Chile for February shipment changed hands at about 9s. 11d. to about 10s. 2d. per quintal f.a.s. The nearest quotation at the close is about 10s. 6d. per quintal, and the quantity available for purchase out of second hands is understood to be comparatively small. The prices of the Nitrate Producers' Association for March-June shipment remain unchanged, and so far no decision has been taken on the price to be fixed for July and later shipment, for which position the quotation is nominally about 9s. per quintal.

The statistical position of nitrate in the United States is moderate, stocks (excluding the Government's unsold holdings) being estimated at 170,000 to 200,000 tons, while the quantity afloat is exceptionally small.

Business in freights has been confined to space by liners for early loading, for which down to 20s. per ton is reported accepted. Further space for the second half of March and April loading is obtainable at about 22s. 6d. per ton.

Society of Chemical Industry

Papers before the Manchester Section

At a meeting of the Manchester Section of the Society of Chemical Industry, held on Friday, March 3 (Dr. E. Ardern presiding), a paper on "The Inorganic Constituents of Coal, with Especial Reference to Lancashire Seams," by F. S. Sinnatt, M.Sc.Tech., F.I.C., and M. Simpkin, M.Sc.Tech., A.I.C., was read by Captain Sinnatt.

Inorganic Constituents of Coal

The authors stated that the investigation of the inorganic constituents of Lancashire coals was being continued, and the present paper was concerned with the examination of the modes of occurrence of iron in certain of the coal seams. The work had been carried out under the auspices of the Lancashire and Cheshire Coal Research Association. In a paper previously read before the Section by Messrs. Bayley, Grounds, and Sinnatt, it was shown that the plates of inorganic material (ankerites) found in coal seams were derivatives of calcium carbonate in which a proportion of the base was replaced by iron (ferrous), magnesium and manganese. It is known that the ankerites undergo oxidation on exposure to air, and that this phenomenon is a factor influencing the disintegration of the masses of coal during storage. It was suggested in the previous paper, and by several speakers in the discussion which followed its reading, that the ferrous iron and manganese might be of importance as agents leading to the spontaneous heating of coal, whether in the goaf or during the storage. The present results, it was thought, might have a bearing upon the behaviour of the ash found when the coals were burned, and might be of value in furthering the discussion upon the influence of the oxidation of the iron present upon the incipient heating of coal.

The work mentioned in the paper largely followed the lines described by Powell, except that additions can now be made to the number of types of iron that he differentiates. Powell distinguishes four forms of iron as occurring in the coal substance, and submits figures for the iron occurring as water soluble iron, iron soluble in hydrochloric acid, iron occurring as pyrites, and that present in the form of a silicate. In the portion soluble in hydrochloric acid, he made no attempt to differentiate between the iron occurring in the form of ankerites and that present in the mass of the coal in other combinations. The amount of iron occurring in the form of ankerites in certain specimens of coal is by no means negligible; one sample examined in which 4.2 per cent. of ash was present being found to contain approximately 1.7 per cent. derived from ankerites. The subject of the different types of iron pyrites was at present being exhaustively investigated microscopically by Mr. J. Lomax, of Bolton, who had already described a number of distinct forms.

The analytical values of three specimens of pyrites were then stated with a view to showing that their composition was variable, and that, in addition to iron pyrites, they might contain iron in the form of carbonate. The extraction of iron by water was of some interest in connexion with the water in mines. This water contained the iron in the ferrous condition, and in a recent heating which occurred in one of the pits observed by the authors large crystals were found in one of the masses of coal when the heated zone had been cooled, which, on examination, proved to be practically pure ferrous sulphate. Iron occurring in the white partings, or ankerites, would readily pass into solution on treatment with acid, but, in view of the fact that many specimens of pyrites which occurred in coal contain iron in the form of ferrous carbonate, it was clear that there were at least two sources from which the iron soluble in hydrochloric acid might be derived. Attempts had been made to determine the percentage of ankerites in coal, but without success.

The third part of the examination conducted by the authors consisted in the determination of the iron disulphide present in the samples by the method suggested by Powell. The details of the experiment having been mentioned, Captain Sinnatt stated that the residual coal was dried and ignited, and the ash carefully examined. It was found that the ash from the majority of the coals examined possessed a faint creamy colour, but three of the coals left a residue which was entirely free from iron. These proved conclusively that nitric acid completely extracted the whole of the iron from the coal. The results confirmed those of Powell. Iron in coal might occur in at least five distinct forms, namely, in the ankerites, in ferrous carbonate, soluble iron salts, silicate, and as pyrites. Results of an investigation of the temperature of decomposition of ankerites were stated in detail.

A discussion followed in which Messrs. Grounds, Terry, Drummond Paton, and Hannay took part, and to which Captain Sinnatt replied.

Cause of Splitting of a Pottery Material

In a paper on this subject Mrs. M. B. Craven, M.Sc.Tech., A.I.C., described the results of an investigation carried out by her during the war period with the object of developing an English ring support for the purpose of carrying incandescent mantles. It had not always been found possible to make English earthenware ring supports for incandescent mantles which would withstand the action of heat as well as would those of certain German manufacture. When heated suddenly the English ones "split off" or splintered. Chemical analysis did not reveal any difference which would account for the success of the one body and the failure of the other. The English clay ring supports split off at the very beginning when the mantle fabric was impregnated with the incandescent oxides, the damage being so great that quite 50 per cent. of the mantles had to be rejected, the remaining 50 per cent. which were good having to carry the cost of the rejects. Two samples of English clay ring supports were examined, one being of better quality than the other, and also a sample of German manufacture. The investigation was rendered somewhat complicated owing to the fact that stress was laid on the difference probably being one of chemical composition. The German ring was called a magnesia ring. In order to ascertain whether magnesia was present in the German body a porosity test was undertaken. If magnesium carbonate had been used, then the body would be more porous than ordinary earthenware, and would probably prove to be efficient under the effects of expansion and contraction.

The analysis indicated quite an ordinary body. The inferior English body was slightly higher in alumina content than the German, while the better type of English body was approximately the same as the German. There was no bone ash content. The evidence obtained by the chemical analysis was entirely negative. There was not sufficient difference to account for the success of the German body and the failure of the English one. The German body had a porosity of 12.6, the inferior English 12.7, and the fairly good English body was slightly more dense.

The difference was discovered to be purely physical. Merely by the eye an examination of fractures of the three rings showed considerable differences in appearance. The German body broke with quite a beautiful fracture, without striation, the inferior English body exhibited considerable striations, while the moderately good English body was something like the German one. In the case of the German body, the grains were quite even in size, while with the inferior English body the grains were very uneven in size. Microscopic investigations showed that the German body was somewhat badly marked with iron specks, but these did not appear to detract in any way from the effective service of the ring. The inferior English body showed air spaces, veins, and striations running throughout the mass, and a so little hillocks of material obviously under different stresses. The difference of formation as compared with the German was very marked.

The defect was, therefore, proved to be a mechanical one, due entirely to the lack of proper preparation of the English material. Probably flint had been used in the manufacture of the English body for the purpose of adding silica. Flint was a very difficult material to use unless ground over a Derbyshire Chert bed. The Germans probably obtained a perfectly even texture by the use of kieselguhr, and through there being no defect with the die. The English die was not perfect. The striations were altogether due to bad pressing. The remedy appeared to be the substitution of kieselguhr for flint, even grinding of the materials used, and better pressing. or, to sum it up quite shortly, better potting.

A long discussion took place in which Messrs. Ardern, Terry, Drummond Paton, Huebner, and Callan took part, and to which Mrs. Craven replied.

Treatment of Cellulose

Papers were submitted on (1) "The Action of Iodine upon Cellulose, Silk, and Wool," by J. Huebner, M.Sc.Tech., F.I.C., and J. N. Sinha, B.Sc.Tech., B.Sc.(Cal.); (2) "The Effect of Water and of Certain Organic Salts upon Celluloses," by J. Huebner, M.Sc.Tech., F.I.C., and Frederick Kaye, A.R.C.S.

The authors described the papers as preliminary notes, and stated that they had discovered that appreciable quantities of pure iodoform were produced by the action of iodine and caustic soda upon highly purified cotton, celluloses made from different kinds of wood, natural silk, some of the artificial silks, wool, rubber, and other substances. Samples of iodoform which had been actually made from cotton and from other celluloses were submitted for inspection.

In the second note Mr. Huebner described some of the results of an investigation, carried out jointly with Mr. F. Kaye, on the effect of water on certain organic salts upon celluloses. In this the authors showed that pure cotton and other celluloses, when exposed to water or water vapour for a considerable time, were attacked, and that as a result aldehydic bodies were formed. Aldehydes in quite appreciable quantities were produced when pure cotton was steeped in an aqueous solution of sodium acetate and kept in an incubator for some time.

A discussion followed in which Messrs. Higgins, Fargher, and Ardern took part, and to which Mr. Huebner replied.

Non-Ferrous Metals Research

Important Investigations in Progress

An interesting statement on developments in research work was made on March 3 at the annual meeting of the British Non-Ferrous Metals Research Association, at the Queen's Hotel, Birmingham. Mr. Thomas Bolton (chairman of the council) presided, and among those present were Vice-Admiral Sir Geo. Goodwin (Engineer-in-Chief to the Admiralty and president of the Institute of Metals), Dr. W. Rosenhain (Metallurgical Department, National Physical Laboratory), Sir Gerard A. Muntz, Bart., Sir Frank Heath (Secretary of the Department of Scientific and Industrial Research), Sir Henry Fowler, Sir R. Threlfall (director, Albright & Wilson, Ltd.), and Principal Grant Robertson (University of Birmingham).

Mr. Bolton pointed out that the research worker was essential for progress in modern industry, and the importance of research was fully recognised by the Government, as was also the advantage of research associations. The hope was entertained that it might be possible to found a certain number of temporary fellowships for post-graduates at the universities to enable men to remain at college for another year for the purpose of devoting themselves to research work. That suggestion, he thought, deserved a great deal more consideration. The Association had no laboratories of its own, and many investigations which were already in progress were undertaken in the national and university laboratories in various parts of the country.

Dr. Rosenhain proposed to carry out a systematic investigation of the effect produced on pure copper by the intentional addition of various elements in small amounts, rising at most up to a proportion of 1 per cent. Dealing with the research work already done and in progress Mr. Bolton referred in detail to the work of Professors F. C. Thompson, T. Turner, H. C. H. Carpenter, C. H. Desch, and Messrs. A. E. Bolton, W. H. J. Vernon, D. Lewis, A. G. Lebley, Bamford and Ballard. It was intended, the chairman added, to continue the study of casting problems, and the Research Committee—Sir Gerard Muntz, Dr. Rosenhain, Professor Turner, Dr. H. W. Brownsdon, Mr. W. R. Barclay, Mr. J. G. Pearce and Mr. S. Evered—together with Messrs. J. W. Earle, A. J. G. Smout and A. H. Wolseley, would have charge of this work.

Mr. Bolton, in conclusion, said he thought the Association had been extremely fortunate in securing the services of Dr. R. S. Hutton as director for a period of six months on a part-time basis.

Recent Wills

Sir Thomas Barclay, of The Uplands, Greenhill, near Bromsgrove, Worcester, chairman of Southall Brothers & Barclay, Ltd., manufacturing chemists, Birmingham £68,121

Mr. Louis Slade Winsloe, of Dunsdale, Frodsham, Cheshire, *chemical merchant, of Tennants'* (Lancs.), Ltd., and a director of the British Magnesite Calcining Co., Ltd. £52,182

Mr. Bridgman Longdale Barrow, of Sydnope Hall, Matlock, Derbyshire, Chairman of the Tolima Mining Co., Ltd. £22,926

Alby United Carbide Factories

Company to be Wound up by the Court

At an extraordinary general meeting of Alby United Carbide Factories, Ltd., held on March 2, at Winchester House, London, E.C., Colonel O. C. Armstrong, who presided, said that at no recent period had the company been adequately provided with working capital. The issued share capital stood at £2,300,000, the major portion of which was represented by entirely unproductive or partially developed non-revenue producing assets. He need only instance the accepted book value of a waterfall in Iceland—a project of the very distant future—valued at £233,000; patent rights with but a short period of life stood in the balance-sheet at no less than £373,500; a nitric acid factory at Dagenham, the capital cost of which was about £223,000, and involving a further loss in working expenses of about £90,000, was to-day practically valueless; while expenditure on a valuable but only partially completed power scheme in Norway accounted for £891,000. A bare 7 per cent. on the company's capital represented a charge of about £160,000 and, to pay even moderate dividends, and find funds for other necessary provisions, the earning power of their carbide and fertiliser factories should have approximated £250,000 per annum, or, on the above basis, a net profit of about 50 per cent. on their book value.

The Hebburn and Dagenham factories were erected at the instigation of the Government, but the terms and conditions on which this was effected were, he said, most unfavourable, and should never have been accepted. The company, it was evident, was over-capitalised, devoid of reserves, and had failed to conserve such resources as became available under war conditions. The inevitable cessation of manufacture meant the loss of their works at Odda, since these were pledged to the Tysse Power Co.

The Odda Works

Their works in Norway were erected on land belonging to the Tyssefaldene Power Co., and the total liability at the rate of exchange prevailing when the contract was entered into was equivalent to an obligatory lump sum payment of £113,242 per annum, whether or not power to the specified amount was used. The Power Co., as a guarantee for payment of rent due, demanded a mortgage on the works, with the right to foreclose should at any time the payment of rent fall three months in arrears. The power paid for was far in excess of the average needs, and if or when bad times supervened it left the company absolutely and entirely at the mercy of the power company, since the buildings were on the power company's land, and, the leasing of power being at their option, there could never be any competition for the acquisition of their properties if they were put up for sale.

The board, he continued, had entered into negotiations with various creditors, and their endeavours resulted in the acceptance of an absolute cancellation of approximately £400,000 of the liabilities, the holding in abeyance of other commitments, and, had their negotiations with Mr. Barton matured, a further advantage of well over £100,000. Unfortunately, all these concessions were subject to the condition that Mr. Barton would promote an English and a Norwegian company for the development of the process for the manufacture of sulphate of ammonia within a limited period of time. Mr. Barton suddenly broke off negotiations. The Tysse Co., of which he had previously acquired control, took early action to complete the formalities of foreclosure and proceeded to obtain the sanction of the local courts to put the properties up to public auction.

Dealing with the balance-sheet, Col. Armstrong said the values of the assets shown were mere book values, and these would now have to be transmuted into break-up prices. What the value of the assets at forced sale might aggregate was, of course, uncertain, but under no possible conditions would there remain any balance for distribution among either the preference or the ordinary shareholders. The most optimistic forecast they had been able to make demonstrated that even the unsecured creditors could not rely on receiving more than a fraction of their claims.

The chairman, in conclusion, moved "That the company be wound up by the court." The motion was seconded by Lord Southborough, and was carried without discussion.

Winding-up Petition

In the Companies' Winding-up Court on Tuesday, Mr. Justice P. O. Lawrence heard the petition of the company for its own compulsory liquidation. Counsel for the company said there was no opposition. His Lordship made the usual compulsory order.

Chemical Matters in Parliament

Imports of German Salt

Sir A. Mond (House of Commons, March 1), informed Mr. Raper, who asked whether bad German salt had recently been arriving in both England and Ireland in large quantities, that he had made inquiries and found that very little salt was imported into this country from Germany. There was no evidence that the salt was in such a condition as to involve any danger to health, but he was having further investigation made.

Australian Zinc Mines

Mr. H. Jones (House of Commons, March 1) asked the President of the Board of Trade whether Australian zinc mining companies were able to pay a dividend as a result of the Government's undertaking to buy large quantities of Australian zinc concentrates for a period of ten years following the conclusion of the war; and whether, owing to the same cause, all British zinc mines had been compelled to shut down.

Sir W. Mitchell-Thomson said that so far as he was aware, out of eleven Australian zinc mining companies only three paid a dividend on their ordinary shares in 1921. The answer to the last part of the question was in the negative.

Celluloid Regulations

In reply to Major Kelley (House of Commons, March 2), Mr. Shortt said that regulations dealing with the use of celluloid in the manufacture of cutlery and other articles had recently been issued, and no extension of them was at present proposed. They were based on the recommendations of the Departmental Committee on Celluloid, which went fully into the question.

Employment in Lead and Zinc Mines

Replying to Mr. H. Jones (House of Commons, March 1), Dr. Macnamara said that in September, 1921, the latest date for which complete figures were available, about 800 persons were employed at lead and zinc mines as compared with about 2,700 in September, 1920, a decrease of 1,900. He could not say how many of the 1,900 were still unemployed, but the number of lead miners on the Live Register of the Employment Exchanges at January 10, 1922, was 440.

Dyestuffs Development Committee

Replying to Mr. Waddington (House of Commons, March 6), Mr. Baldwin said he understood that the Dyestuffs Development Committee was engaged in a careful survey of the precise extent to which British makers were in a position to meet the requirements of British consumers of dyestuffs in order to ascertain as definitely as possible the direction in which it was of chief importance that production should be developed. He did not think it would be right to ask the Committee to issue a Report at this stage.

Representation of Dye Users

Mr. Waddington (House of Commons, March 6) asked the President of the Board of Trade whether if some consumers of dyes, although they had a majority over the dye makers on the Dyestuffs Licensing Advisory Committee, still complained of inability to obtain the correct dyes for their trade, and whether they had any means through the Colour Users' Association or otherwise of changing their representatives on the Committee. Mr. Kiley asked why no traders were represented on the Committee.

Mr. Baldwin said four of the five representatives of the consumers had been appointed by the Board of Trade on the nomination of the Colour Users' Association, and should any members of the association be dissatisfied with the proceedings of these representatives it was open to them to take steps within the Association with the object of bringing about a change.

Stocks of German Dyes

In reply to Mr. Waddington (House of Commons, March 6), Mr. Baldwin said he was aware that considerable stocks of German dyes were being carried by agents in this country, but he had no knowledge of a list mentioned by Mr. Waddington, containing details of 202 qualities of dyes which were being equally efficiently made in this country. During the period in which there was no restriction on importation, quantities of dyestuffs greatly in excess of current trade requirements were imported by the agents, and the prolonged trade depression had no doubt very much delayed the liquidation of the stocks.

Importation of Lime Green

Lieut.-Commander Kenworthy (House of Commons, March 6) asked the President of the Board of Trade whether the Dyestuffs Advisory Licensing Committee refused to grant licences to import lime green, in spite of the fact that British lime green of equal quality to the imported could not be manufactured from British material; and whether he was aware that this refusal to grant licences would seriously increase the cost of production of certain classes of paint in this country, owing to the very high price of British lime green in spite of the inferior quality.

Mr. Baldwin said he understood that this matter had received, on several occasions, the careful consideration of the Dyestuffs Advisory Licensing Committee, who, after full inquiry, were satisfied that the statements as to the inferiority of the British product were not warranted, and that the difference in price was not such as to be material.

Licences for Importation of Rhodamine

Mr. Kiley (House of Commons, March 6) asked the President of the Board of Trade if he was aware that Hulse & Co. applied to the Dye Advisory Committee for a licence to import rhodamine, which application was refused with the advice that they should apply to the Clayton Aniline Co., Ltd.; whether he was aware that the Clayton Aniline Co. were themselves importers; whether he could state what amount of dyes this firm had been permitted to import during the year ending December 31, 1921; and whether he could say what was the object of compelling one importer to buy his goods from another importer.

Mr. Baldwin said the firm mentioned applied for a licence to import rhodamine B, which was manufactured in this country by the Clayton Aniline Co. No licences to import the dyestuff in question had been granted to the Clayton Aniline Co.

Tartaric Acid Inquiry

In reply to Mr. Galbraith (House of Commons, March 6), Mr. Baldwin said the complainants in the tartaric acid and cream of tartar inquiry consisted of two firms whose names were disclosed at the hearing and certain other firms whose names were not so disclosed. The Board were satisfied that the latter were British firms, and parties "interested" within the meaning of the Act, but that the disclosure of their names might cause them commercial disadvantage.

Oil Wells in Great Britain

Answering a question by Mr. Doyle (House of Commons, March 6), Mr. Bridgeman said the only producing oil well in the United Kingdom at the present time was that put down at Hardstoft, in Derbyshire. The production for the six months ending December 31, 1921, amounted to 78 tons. He did not think any oil had been sold since October, 1920, as it was difficult to dispose of small quantities of crude oil to advantage. The evidence so far obtained has not been sufficiently conclusive to admit of an opinion being expressed as to the commercial possibilities of oil-boring in this country. The Government had abandoned their intention of introducing legislation to give the Crown any further rights or powers in respect of petroleum than it already possessed under the Petroleum Production Act, and in exercising their powers under that Act the Government would not interfere with the rights of private individuals further than might be necessary to prevent indiscriminate or improper boring.

Committees of Inquiry

In reply to Captain Wedgwood Benn (House of Commons, March 6), who asked whether witnesses representing the ordinary consumer would be allowed to give evidence before the Board of Trade Committee under Part II. of the Safeguarding of Industries Act, Mr. Baldwin said it was for the Committee to determine whether evidence from an ordinary consumer regarding the effect of duties on prices would or would not be relevant to the matters covered by the terms of reference.

Regulating Imports of Dyes

Mr. Newbould (House of Commons, March 6) asked the President of the Board of Trade whether, in view of the dissatisfaction existing in connexion with the many refusals of the Dye Advisory Committee to permit certain essential

dyes to be imported, he was prepared to consider the appointing of a referee to whom dissatisfied persons could appeal on lines similar to those under the Safeguarding of Industries Act.

Mr. Baldwin said the constitution of the Advisory Licensing Committee was prescribed by the Dyestuffs (Import Regulation) Act, and the Committee included three independent members, one of whom was chairman. The appointment of a referee would be a serious and unwarranted reflection upon the impartiality and competence of these gentlemen. If dissatisfaction was felt in any case it was open to applicants to appeal to the Board of Trade.

Scientific Plant

Sir Charles Oman (House of Commons, March 7) asked the Chancellor of the Exchequer whether he would take steps to secure that such delays as eight weeks did not occur between the arrival of a parcel of scientific plant from Germany, unprocurable in England, and its delivery to a university laboratory, which paid at once all dues demanded by the office in London.

Mr. Young said the Chancellor of the Exchequer was unaware of any reason, so far as the Customs Department was concerned, why such a delay should occur, provided the official requirements were complied with.

Taxation Reductions

To the Editor of THE CHEMICAL AGE

SIR,—As the end of this trying fiscal year (April 5) approaches taxpayers will anxiously review their assessments with a view to claimable reductions. There are many cases in which repayment and/or reduction of tax can be effected before the July instalment falls due. The following are the main grounds of application, and will prove helpful to your readers.

(1) Employees of companies and public bodies who have left during the year should pay on the earnings to the date of leaving only.

(2) A loss in one trade may be set against the profits of another in arriving at the amount of assessment.

(3) Where owing to cessation of business, or the taxpayer dying or becoming bankrupt, or to any other specific cause (where ownership has changed) the profits fall short of the assessed amount, reduction to the actual year's profits may be claimed.

(4) A person succeeding to the business, or a new partnership, may apply for adjustment to the actual profits, if they are less through some specific cause arising since or by reason of the succession.

(5) If a trade, profession, or vocation has commenced within the last four years, a claim may be made for reduction to the actual profits; if the trade, &c., is discontinued, a similar claim for current year and for the total of three previous years.

(6) Where a loss is sustained in trade, profession or employment, vocation or husbandry, tax on the amount of such loss is reclaimable against any tax paid for that year. This relief should only be claimed with discrimination, and in the absence of any other allowable relief, as the amount of loss on which repayment is made is not available to reduce future averages.—Yours, &c.,

W. R. FAIRBROTHER.

67-68, Cheapside, London, E.C.2.

The Death of Dr. B. Moore

WE regret to record the death, on March 3, of Dr. Benjamin Moore, Whitley Professor of Biochemistry in the University of Oxford. He was a pupil of Sir William Ramsay, and was for five years on the staff of University College, London. While there he was attracted by the biological aspects of chemistry, and left London to take up the post of Professor of Physiology at Yale College, New Haven. In 1902 he was appointed to the Johnston Chair of Biochemistry at Liverpool, which was the first chair in that subject to be founded in this country, and it was while he held this post that he, in conjunction with Mr. Whitley, founded the *Biochemical Journal*. He relinquished this position in 1914 to join the Medical Research Staff, and in that capacity he investigated the causes of poisoning during the war among workers in explosives factories. Hardly more than a year ago he was elected to the Chair of Biochemistry then founded at Oxford by Mr. Edward Whitley. Dr. Moore, who was fifty-five years old, and was the author of a number of books and papers, was elected a Fellow of the Royal Society in 1912.

Society of Public Analysts

AT the Ordinary Meeting held on Wednesday, March 1, at the Chemical Society's Rooms, Burlington House (Mr. P. A. Ellis Richards, president, in the chair), certificates were read for the first time in favour of:—Messrs. William John Agnew, B.A. (R.U.I.), Reginald Ernest Essery, B.Sc. (Bristol), A.I.C., Arthur Thomas Etheridge, M.B.E., B.Sc. (Lond.), F.I.C., George Girvan Herbert, A.I.C., George Lewis Hutchison, B.Sc. (Lond.), F.I.C. Certificates were read for the second time in favour of (as an honorary member) Sir Robert Robertson, K.B.E., F.R.S., and as ordinary members:—Messrs. Reginald Thomas Colgate, D.Sc. (Lond.), F.I.C., Frederick Norman Appleyard, A.I.C., Harold James Foster, Hammersley David George Holt, B.A. (Cantab), Shozaemon Keimatsu, James Miller, F.I.C.

The following were elected members of the Society:—Messrs. John Leonard Lizius, B.Sc., A.I.C., Harry Malkin Mason, M.Sc. (Shef.), F.I.C., Thomas McLachlan, A.I.C., Charles March Caines, F.I.C., Girija Nath Mukerjee, B.Sc. (Cal.).

Abstracts of Papers

In a paper on "The Theobromine Content of Cacao Beans and Cocoa," Mr. Raymond V. Wadsworth pointed out that the analyses of cacao beans from twenty-one different producing areas showed a variation in the theobromine content of the nib from 2.2 per cent. to 3.9 per cent. calculated on the dry fat-free material. The variation was due (1) to the variety of the bean (the Criollo bean containing much less theobromine than the Forestero), and (2) to the amount of fermentation the bean has been subjected to (fermentation reducing the theobromine considerably). In the shell the theobromine varied much more than in the nib. The variation found was between 0.19 per cent. and 2.89 per cent. This difference was wholly due to fermentation; during the process the alkaloid was brought by the sweatings from the nib to the shell, the amount naturally present in the shell being only 0.19 per cent. During roasting there was practically no loss of theobromine from either nib or shell. The analyses of twenty-two brands of commercial cocoas showed a variation in the theobromine content of 2.39 per cent. to 3.55 per cent. calculated on the dry fat-free cocoa.

Mr. R. E. Essery, B.Sc., A.I.C., in dealing with "The Value of Fish Scales as a Means of Identification of the Fish Used in Manufactured Products," pointed out that, in many cases, useful information as to the variety of fish employed in manufacture might be obtained from a microscopical study of the scales. Even in the case of fish-pastes, where the scales were largely broken up, the method possessed value. The author showed diagrams of seven types of scale.

"The Determination of Aldehydes and Ketones by means of Hydroxylamine" was the subject of a paper by Messrs. Alex. H. Bennett and F. K. Donovan, who showed that the method for the estimation of citral in lemon oil previously described by one of them (Bennett *Analyst*, 1909, 34, 14) was applicable in the case of other aldehydes such as formaldehyde, benzaldehyde, cinnamic aldehyde, citronellal; and of ketones, such as acetone and carvone. With camphor no quantitative results could be obtained. Slight modifications in methods of analysis which were necessary with different substances were described. In the case of acetone, accurate results could be obtained even in the presence of ethyl alcohol. The authors considered that the estimation of citral by means of hydroxylamine was preferable to the method involving absorption with sodium sulphate.

In a paper on "The Examination of B.P. Ointments," Messrs. Norman Evers, B.Sc., F.I.C., and G. D. Elsdon, B.Sc., F.I.C., pointed out that methods of analysis were given for the examination of certain B.P. ointments. The refractive index as a method of testing ointments was discussed.

Rayleigh Memorial Fund

AT a congregation of Cambridge University on February 17 approval was given to the recommendations of the Council of the Senate on the gift of the balance of the Rayleigh Memorial Fund to the library of the Cavendish Laboratory. The library is to be called the Rayleigh Library. Out of the sum received £600 is to be separately invested in the Rayleigh Library Endowment Fund for Experimental Physics, and the income accruing therefrom is to be paid to the Cavendish Professor for the purposes of the library. A book-plate is also to be prepared and a copy of it placed in each book purchased out of the fund.

From Week to Week

The annual Canadian PRODUCTION OF COBALT is said to amount to over 500,000 lb.

MR. G. S. W. MARLOW, assistant secretary of the Institute of Chemistry, has passed the final examination for the Bar.

The first award of the MELDOLA MEDAL has been made by the Council of the Institute of Chemistry to Dr. C. K. Ingold.

The offices of ARTHUR & HINSHAW, chemical manufacturers and merchants, have been removed to 4, Blythswood Square, Glasgow.

The explosion of a drum of CALCIUM CARBIDE on a trawler at Belfast on Tuesday resulted in the death of one man and serious injuries to two others.

SIR ROBERT BIRD, son of the late Sir Alfred Bird, standing as a Coalition Conservative, has been elected a Member of Parliament for West Wolverhampton.

At Shrewsbury last week the BRITISH PETROLEUM CO., LTD. were fined £25 for allowing a lighted candle to be used in their Shrewsbury store on January 17 last.

The lock-out of BELGIAN GLASSWORKERS has been averted by the decision of the workers to accept the 20 per cent. wage reduction proposed by the employers.

MR. VICTOR BLAGDEN (Victor Blagden & Co., London) has been elected president of the British Chemical Trade Association in succession to Mr. H. H. Hughes.

On Monday, at the Royal Society of Arts, London, Professor A. F. C. Pollard concluded his course of lectures on "THE MECHANICAL DESIGN OF SCIENTIFIC INSTRUMENTS."

At the annual meeting of the AMERICAN LINSEED CO., the president of the company said that their efforts to consummate a merger with Lever Brothers, Ltd., had been unsuccessful.

MR. ARTHUR ERNEST MOURANT, of Victoria College, Jersey, has been elected at Exeter College to a scholarship of £100 per annum for chemistry on the King Charles I. Foundation.

Prospects of work for SHALE MINERS in the Broxburn district of Scotland are now much brighter. Scottish Oils, Ltd., have reopened one mine and 100 men have begun work again.

It is reported from Prague that Dr. Horak, a local engineer, has invented a species of glass, which, though not absolutely unbreakable, is claimed to be THE TOUGHEST GLASS ever produced.

Lecturing on "RADIO-ACTIVITY" at the Royal Institution on March 4, Sir Ernest Rutherford demonstrated the phosphorescence of radio-active substances by means of an uranium sulphate screen.

THE SCARAB OIL BURNING CO., LTD., are now installing at Newcastle, furnaces for their colorisation process which is intended to prevent the oxidisation of metals in high temperatures up to 1,800°F.

MAJOR A. G. CHURCH, Secretary of the National Union of Scientific Workers, addressed a meeting of scientific workers and students on "The Profession of Science" at Marischal College, Aberdeen, on March 4.

The death is announced of MR. H. W. L. ROBINSON, at his residence at Leytonstone. Mr. Robinson, who was sixty years old, was managing director of the St. George's Chemical Co., Ltd., Limehouse, London.

MAJOR THOMAS WORSWICK, a Bibby scholar of Liverpool University, has been appointed Director of Education at the Polytechnic, Regent Street, London, in succession to Major Robert Mitchell, who is retiring.

Applications are invited by March 25 for the post of ASSISTANT LECTURER IN MATHEMATICS AND PHYSICS at the Sir John Cass Technical Institute. Particulars may be obtained from Dr. C. A. Keane, the Principal of the Institute.

The Royal Wedding was celebrated by the staff of LEVER BROTHERS, LTD., on March 1, when a ball was held in the Hulme Hall, Port Sunlight. There was an attendance of about 300 guests, and the proceeds will be given to the local Distress Fund.

According to advices from Berlin, a Munich chemist, Herr Prueckner, claims to have discovered a method of making COAL FROM STONES by pulverising stones, and, after adding certain chemicals, applying heat in varying degrees and allowing the mass to cool.

The Arizona Copper Co. announce that, as the result of a poll, MR. NORMAN CARMICHAEL, formerly general manager of the company, has been nominated by the shareholders to be the company's representative on the board of the Phelps-Dodge Corporation, Ltd.

A meeting of the Glasgow Section of the Society of Chemical Industry was held on March 3, Professor F. J. Wilson presiding. Mr. R. H. Hopkins, F.I.C., lecturer in biochemistry at the Heriot-Wall College, Edinburgh, read a paper on "HYDROGEN IONS IN BIOCHEMICAL PROCESSES."

At a meeting of the Council of the University of Manchester on March 3, congratulations were offered to PROFESSOR F. L. Pyman, formerly a student and at present professor of technological chemistry in the University of Manchester, on his recommendation for election as a Fellow of the Royal Society.

The council of the Institute of Chemistry have directed the attention of the Middlesex County Council to the fact that the remuneration offered by them for the APPOINTMENT OF PUBLIC ANALYST represents a fee per sample far below the average of the fees paid by local authorities in Great Britain generally.

In the Scottish Court of Session on March 2 Lord Anderson pronounced judgment in an action by the Langloan Iron and Chemical Co., Ltd., Coatbridge, against the North British Railway Co. for payment of £5,850 damages for alleged breach of agreement. His lordship awarded the pursuers £510 damages.

MR. A. W. EDWARDS, of R. W. Greeff & Co., Ltd., chemical merchants, Thames House, Queen Street Place, London, has been admitted a Fellow of the Chemical Society. Employed by the Bayer Co., Ltd., from 1910 to 1914, he served with H. M. Forces throughout the war and joined the staff of R. W. Greeff & Co. in April, 1919.

The serious decline in the CONSUMPTION OF NITRATE OF SODA was attributed by Mr. F. G. Lomax, in the course of a speech at the annual meeting last week of the New Tamarugal Nitrate Co., Ltd., to the widespread drop in values of agricultural produce, aggravated by the violent fluctuations of depreciated currencies in many of the countries where nitrate is used.

At a meeting of the Ceramic Society, held on Monday at the Central School of Science and Technology, Stoke, Dr White read a paper on "CHEMICAL PORCELAIN," in which he dealt with its resistance to fracture on rapid heat change. A theory of fracture based upon investigations into the variation in power of resistance to fracture of ceramic bodies was advanced.

Speaking on March 3 at the annual meeting of Radium Ore Mines, Ltd., Mr. R. F. Cheux referred to the discovery on their property of four new pitchblende lodes. Should their anticipations as to the richness of one or more of these lodes be realised, they would immediately erect a CRUSHING AND TREATMENT PLANT.

In his speech at the annual meeting of Borax Consolidated, Ltd., on Tuesday, the chairman (the Earl of Chichester) said he was convinced that largely as BORAX and BORIC ACID were used for manufacturing purposes, there was still a large field open for their extended use in that direction. A more or less recent extension had been that of the manufacture of heat-resisting glassware for cooking and other purposes.

The Board of Trade have received formal notices of complaint under Section 1, Sub-sec. 5 of the Safeguarding of Industries Act, that BARIUM PEROXIDE of 80 per cent. and over, and ANHYDROUS SULPHUROUS ACID have been improperly excluded from the lists of articles chargeable with duty under Part 1 of the Act. The complaint regarding barium peroxide will be heard by the Referee on Saturday, March 18, at 10 a.m., at the offices of the Board in Great George Street, Westminster, London.

Speaking on March 3 at the annual meeting of the ASSOCIATION OF TECHNICAL INSTITUTIONS, Lord Burnham said he believed that technical instruction was perhaps the most vital part of the national system. The headmaster of one school, himself a chemist of the highest competence, told him that in the technical journals which he read practically all the advance had been made by the Germans since the war, and in spite of the difficulties which must exist in regard to cost and administration they had yet succeeded not only in holding their prime place but in increasing it in the world of abstract science and of appliances.

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Abstracts of Complete Specifications

174,653. Sodium Compounds and By-Products, Manufacture of. E. E. Naef, 16, Loughborough Road, West Bridgford, Nottingham. Application date, November 10, 1920.

Sodium sulphide in the form of fine crystals or concentrated powder of 61 per cent. strength is mixed with very finely-divided charcoal powder, such as "Eponit" or "Norit." This mixture is oxidised by means of air or oxygen at ordinary temperatures, the reaction being strongly exothermic. The products are sodium thiosulphate, sodium hydroxide, and a small proportion of sodium carbonate. The reaction is effected in closed vessels, so that the heat developed may be controlled by regulating the admission of air. The nitrogen remaining may be recovered as a by-product. The product is treated with water, and the solution of sodium thiosulphate and caustic soda is concentrated until the sodium thiosulphate crystallises out on cooling. The charcoal may be washed and dried for use again. Alternatively, caustic soda may be extracted by means of hot ethyl alcohol, and the residue then treated with hot water to extract the sodium thiosulphate. In another alternative, the aqueous solution of sodium salts is treated with carbon dioxide to convert the alkali into carbonate, which may then be crystallised out and the thiosulphate recovered from the solution. In another alternative, the aqueous solution is electrolysed at 20°- 60°C., which results in the formation of caustic soda at the cathode and sulphuric acid and sulphur at the anode. These may be collected in separate porous cells and then concentrated.

174,656. Phenolic Condensation Products, Manufacture of. H. Wade, London. From Redmanol Chemical Products Co., 636, West 22nd Street, Chicago, Ill., U.S.A. Application date, July 29, 1920.

A moulded phenolic condensation product is composed of a fibrous filler, and a binder comprising a substantially anhydrous fusible phenolic condensation product and a methylene body adapted to react anhydrously with it. This mixture is heated in a mould for a short period so that the mixture is not rendered infusible, and the article is then removed from the mould and heated until it becomes hard and infusible. The fusible condensation product preferably contains about 2½ phenolic groups to each methylene group, and when the methylene body consists of hexamethylene tetramine this ratio is about 1 molecule of hexamethylene tetramine to 15 molecules of cresol. In an example, a mixture of commercial cresol 1,080 parts, and hexamethylene tetramine 93 parts, is heated to 140°C., while ammonia is evolved. The mixture is then heated to 165°C. for twelve to twenty-four hours, and the temperature then raised gradually to 215°C. yielding the desired fusible condensation product. This product is fused at 150°F., mixed with hexamethylene tetramine, so that the whole contains one methylene group to each phenolic group, and the mixture is added to the filling material, together with a small quantity of a high-boiling solvent such as creosote oil. The articles moulded from this mixture are subjected to prolonged heat treatment at a temperature rising from 100°F. to 450°F. The product is hard and infusible.

184,676. Carbonising Carbonaceous Materials, Process for. C. W. Wallace, 1,605, North 46th Street, East St. Louis, Ill., U.S.A. Application date, September 24, 1920.

The process is for distilling, carbonising, or vaporising carbonaceous material such as coal, lignite, or oil shale. When these materials are heated in a retort in such a manner that the evolved vapour is immediately withdrawn through the coolest portion of the material into a discharge conduit, it is found in some instances that gas continues to be given off from material which has passed through the coking stage. This gas produces a back pressure in the outer zone beyond the coking zone which may be sufficiently high to force the gas through the coking zone, thus producing cracks and finally disintegrating the coke. The carbonaceous material is heated in a vertical retort by means of an external combustion chamber, and the vapour products are drawn off through a perforated conduit which extends upwards through the centre of the retort and is closed at the top. In this invention the upper end of the take-off conduit is provided with a valve which is adapted to open in the event of excessive gas pressure in the outer coked layers of the charge and in the space above the charge.

174,690. Heating Materials at Successively Different Temperatures, Method of and Apparatus for. Thermal Industrial and Chemical (T.I.C.) Research Co., Ltd., Sir A. M. Duckham, and J. S. Morgan, 52, Grosvenor Gardens, London, S.W. 1. Application date, October 20, 1920.

A material is subjected to heat treatment at different temperatures in succession by passing it in the form of a layer repeatedly through molten metal. This may be done by carrying the substance below the surface of the molten metal in contact with a moving surface, such as a drum or band, or alternatively by the process described in specification No. 170,617 (*see* The Chemical Age, Vol. V., p. 708), in which an annular film of tar or oil is forced into the molten metal. The successive temperature steps may be obtained in a single bath of molten metal by varying the time of immersion of the material, or by passing the material through successive baths of molten metal at different temperatures. The process is particularly applicable for the fractional distillation of liquid or solid material, *e.g.*, the destructive distillation of wood.

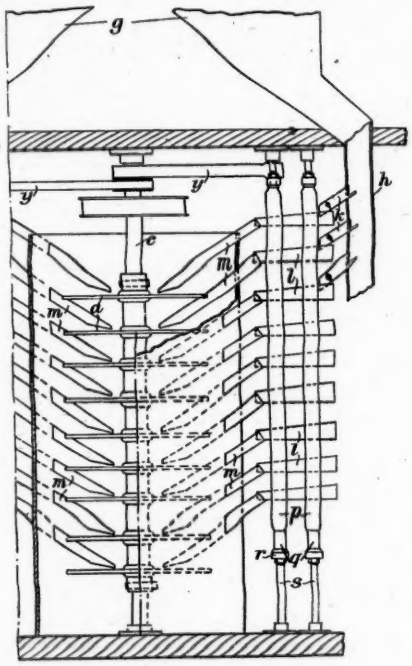
174,702. A Product Adapted Particularly for Sanitary, Medicinal and Therapeutic Uses, Process for Producing. J. N. A. Sauer, den Texstraat 2, Amsterdam. *Application date, October 26, 1920.*

The product is obtained by treating decolorising carbon of vegetable origin so as to convert it into a very pure, neutral, and sterile carbon of the highest absorptive power. Ordinary decolorising carbons of vegetable origin usually contain about 90 per cent. of elementary carbon in an active and porous condition, and about 4-6 per cent. of ash consisting of potassium carbonate, calcium phosphate, calcium carbonate, magnesium carbonate, iron phosphate, silica, &c., and the object is to remove these impurities. The decolorising carbon is first treated with caustic soda, sodium carbonate, or ammonia of 2-20 per cent. strength at boiling point, which dissolves organic or partly carbonised matter and silicates, and the material is then washed with hot water until the water is neutral. The carbon is then treated with an excess of dilute acid of 0.5-5 per cent. strength, such as hydrochloric or nitric acid, and then washed with hot water until neutral. Traces of acid still remain in the carbon and are removed by heating it to incandescence in the absence of air. The alkali and acid selected for the treatment must be such as will combine and form water-soluble salts which are also volatile. The product may finally be heated to 500°C. with exclusion of air, or may be treated with superheated steam. For some purposes the active carbon may be obtained in coherent form by the use of a water-soluble organic binder, such as cane sugar or lactic sugar, which do not impair the adsorptive capacity of the carbon.

174,739. Separating Minerals and other Substances, Method and Apparatus for. S. Nettleton, 42, Dunmore Road, Wimbledon, London, S.W. 19. Application dates, November 2, 1920, and February 10, 1921.

The process is for the separation of minerals by utilising the difference in frictional resistance when passing over a surface of glass, metal, or the like. Coal may be treated for the removal of stone, shale or the like, and metalliferous ores may be separated from one another or from mine gangue. The material is supplied from two hoppers *g* through shoots *h* on either side of a series of rotating discs *a* mounted on a vertical shaft *c*. The material then passes through smaller shoots *k* to horizontal feeding troughs *l*, and thence through inclined shoots *m* on to the rotating discs. The momentum of the material is sufficient to carry the mineral across the surface of the disc into a collecting shoot, while the shale and the like, owing to their higher co-efficient of friction, are retarded and leave the mineral at an angle and are collected by means of another shoot. The troughs *l* are carried by vertical rods *p* fixed at their lower ends to rods *q* which are

carried by brackets *r* on pivotal rods *s*. The upper ends of the rods *p* are similarly connected. A reciprocating motion



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is thus imparted to the troughs *l* by means of a rod *y*, which is eccentrically mounted on the shaft *c*. A uniform feed from the troughs *l* is thus obtained.

174,877. TAR-DISTILLATION AND LIKE STILLS. C. Benn, C. H. Benn and C. L. Benn, Oakdene, Station Lane, Woodlesford, near Leeds. Application date, March 18, 1921.

Tar distillation stills of the cylindrical type, with dome shaped bottoms, are usually constructed so that the dome shaped portion is formed as an upturned annular flange, which is passed within the shell of the still and rivetted to it. It is found that the hot gases, in passing from the furnace into an annular heating flue surrounding the still, are liable

Fig. 1.

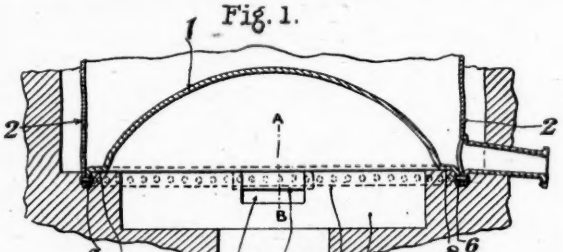
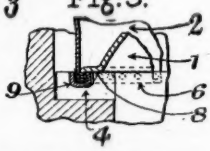


Fig. 3.



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to attack the rivetted joint, and the object is to construct a still which avoids this defect. The dome shaped portion 1 is formed with a base 8 and a downwardly directed flange 6, which is rivetted to the lower edge of the shell 2. When the still is mounted above the furnace 3, the depending annular flange 6 is sunk in the brickwork, and the rivetted joint is thus protected from injury. That portion of the joint situated over the radial flue 4 is protected by means of a short member 9 of channel section.

174,784. ANTHRAQUINONE, PROCESS FOR THE PURIFICATION OF. W. H. Dawson, of British Alizarine Co., Ltd., Silvertown, Victoria Docks, London, E. 16. Application date, November 16, 1920.

The object is to purify anthraquinone from anthracene by a process which eliminates the drying of crude moist anthraquinone which is necessary when some solvents are used. It is found that this may be effected by using cresols or their homologues as solvents for the anthraquinone. The commercial mixture of cresols, &c., known as cresylic acid may be used. In an example, crude anthraquinone paste of 92 per cent. purity is heated with cresylic acid to boiling point. The mixture is cooled to 25°C., and anthraquinone of 99 per cent. purity crystallises out. Anthracene is recovered from the liquor by dissolving the cresylic acid in caustic soda, and precipitating the anthracene. If crude moist anthraquinone is treated, the water is removed by distillation on heating the cresylic acid, and subsequent drying of the anthraquinone is unnecessary. It is found that the anthraquinone obtained has a higher melting point than usual (287°C.).

174,878. AMMONIUM SULPHATE, MANUFACTURE OF. South Metropolitan Gas Co., and E. V. Evans, 709, Old Kent Road, London, S.E. 15, P. Parrish, 64, Foyle Road, Blackheath, London, S.E., and O. W. Weight, 46, Haywood Road, Bromley, Kent. Application date, March 18, 1921.

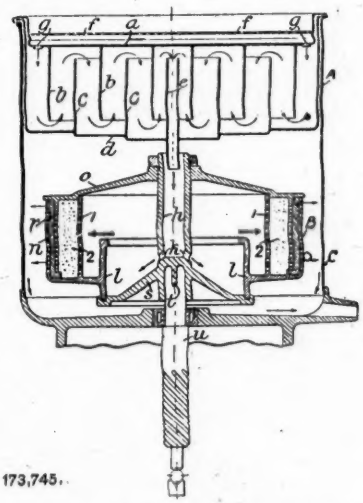
The object is to produce neutral ammonium sulphate from the crude salt obtained from coke-oven gases by the direct or semi-direct process. The crystals produced in the saturator are usually too fine for neutralisation by means of ammonia in a centrifugal machine, while if the crystals are stirred with the ammonia solution the amount of solution used would dissolve a considerable proportion of the sulphate. In this process the crystals are stirred with the mother liquor, which has been made sufficiently alkaline with ammonia to produce a neutral sulphate in one application. The ammoniacal mother liquor is oxidised by means of air until no further precipitate is produced and then filtered. This liquor is then used for treating the crystals, the quantity of the liquor being about three times the weight of the crystals.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention:—154,579 (A. Wohl) relating to production of aldehyde and acetic acid, see Vol. IV., p. 195; 156,187 (Chemische Fabriken Worms Akt.-Ges.) relating to regeneration of metallic mercury, see Vol. IV., p. 342.

International Specifications not yet Accepted

173,745. CENTRIFUGAL SEPARATORS. L. Berard, Val d'Herblay, Seine-et-Oise, France, and L. Drin, 54*bis* Rue Michel-Ange, Paris. International Convention date, January 4, 1921.

Liquid to be filtered is poured on to a wire cloth *f*, which retains coarser solid matter, and the liquid passes into a



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vessel *d* having annular baffles *c*, which alternate with similar baffles *b* depending from the cover *a*. This vessel acts as a

decanter and the liquid then passes through the tubes *e*, *h*, and openings *k* into the rotary decanter *l*. This decanter is driven by a shaft *u* and is provided with double perforated walls 1, *n*, while the cover *o* is provided with an intermediate perforated wall. The annular space 2 is filled with pulverulent filtering material, and the space *r* with filter cloth. Solid particles are separated centrifugally in the vessel *l* and the liquid then passes in succession through the two annular filters.

173,757. TANNING AGENTS. Gerb.-und Farbstoffwerke H. Renner & Co., Akt.-Ges., 20, Billhorner Canalstrasse, Hamburg, Germany. International Convention date, January 8, 1921.

Metal sulphonates suitable for tanning and mordanting purposes are obtained by sulphonating coumarone resins with concentrated sulphuric acid, and then treating with oxides. hydroxides, or carbonates of iron, chromium, or aluminium, In an example, coumarone resin is treated with fuming sulphuric acid, and the aqueous solution of the product nearly neutralised with caustic alkali. Aluminium or iron hydroxide is added and the solution evaporated to dryness. In an alternative, calcium carbonate is used as the neutralising agent, and aluminium, chromium, or iron sulphate added. In another alternative, the sulphonated resin is just neutralised with chromium, iron, or aluminium hydroxide.

173,774. TITANIUM SULPHATE AND OXIDE. Chemische Werke vorm. Aurges (*formerly* Ges. für Verwertung Chemischer Produkte, 11, Ehrenbergstrasse, Berlin. International Convention date, January 8, 1921.

Titaniferous iron ore is converted into a crude solution of sulphates, which is then treated with metallic iron to reduce the ferric sulphate to ferrous sulphate, which is then crystallised out. The purified titanium sulphate is hydrolysed to obtain pure titanium oxide.

173,780. MERCURIC OXIDE. Elektrizitätswerk Lonza, Basle, Switzerland. International Convention date, January 8, 1921.

Alkalis and oxy-salts when electrolysed with a mercury anode yield mercuric oxide containing up to 50 per cent. of mercury. This mixture is distilled at 300°-450°C. in an atmosphere of air or other gas containing oxygen, whereby the vapour pressure of the mercury is reduced, and the smaller particles oxidised. The oxide is thus purified from mercury.

LATEST NOTIFICATIONS

175,949. Apparatus for delivering molten glass and shaping and separating the same. Owens Bottle Co. February 23, 1921.
175,958. Devices for the withdrawal of liquids under gaseous pressure. L'Air Liquide Soc Anon pour l' Etude, et l'Exploitation des Procédés G. Claude. February 23, 1921.
175,959. Apparatus for moulding soap. American Cotton Oil Co. February 24, 1921.
175,963. Apparatus for dry distillation. Maschinenfabrik Augsburg—Nurnberg. Akt.-Ges. February 21, 1921.
175,974. Method of manufacturing hydrocarbon oils from oils, fats, and fatty acids. Nihon Glycerine Kogyo Kabushika Kaisha. February 25, 1921.
175,978. Method of treating peat. Mueller, H. A. February 26, 1921.
175,987. Process of recovering solutes from solution. Silica Gel Corporation. February 25, 1921.
175,989. Fixation of nitrogen. Andreu, P., and Pacquet, R. February 23, 1921.
176,006. Process of, and composition for, soldering aluminium. Passalacqua, A. February 28, 1921.

Specifications Accepted, with Date of Application

153,918-9. Tropinone mono-carboxylic acid esters, Preparation of. E. Merck (Firm of). August 23, 1919. 153,918 addition to 153,919.
154,153. Tanning materials, Manufacture of. Chemische Fabriken Worms Akt-Ges. November 18, 1919.
155,299. Zirconium, Production of. W. North and H. Loosli. November 14, 1919.
163,039. Filter for gaseous media. L. B. Fiechter. May 6, 1920.
175,312. Regenerative coke ovens. J. H. Brown. August 11, 1920.
175,313. Vegetable ivory, Process for treating. E. C. Long. August 13, 1920.
175,319. Coking coal, Process and apparatus for. A. Roberts. August 21, 1920.
175,330. Cellulose from vegetable matter, Process of obtaining. G. J. Bustamante. October 1, 1920.
175,333. Ores and the like, Treatment of. A. C. Vivian. October 7, 1920.
175,334. Separators for granular materials. I. Lupascu. October 7, 1920.
175,348. Potassic rocks, Process for the separation of the constituents of. G. A. Blanc and F. Jourdan. October 15, 1920.
175,352. Dehydrator. F. W. Harris. November 3, 1920.
175,384. Gold from pyritic ores, Recovery of. R. J. Lemmon, H. L. Sulman and Minerals Separation, Ltd. November 11, 1920.
175,390. Electrolytic apparatus for preparing hypochlorite solutions. D. M. Rogers and A. T. Masterman. November 12, 1920.
175,401. Electrolytic cells. G. Harrison. (*Dow Chemical Co.*) November 15, 1920.
175,406. Oils, Heat treatment of. R. Ingham, Clark & Co., Ltd., and J. N. Tervet. November 15, 1920.
175,478. Centrifugal separators. R. A. Sturgeon. December 13, 1920.
175,485-6. Cellulose acetate products, Treatment of. British Cellulose and Chemical Manufacturing Co., Ltd., and L. G. Richardson. December 18, 1920.
175,501. Hydrogen and mixtures of hydrogen and nitrogen, Manufacture of. J. Harger and Woodcroft Manufacturing Co., Ltd. December 30, 1920.
175,517. Nitrogen compounds, Production of—by the absorption of nitrogen in a mixture of reaction. C. T. Thorssell and H. L. R. Lunden. January 19, 1921.

Applications for Patents

Attwater, R., and Byrom, J. G. Method of manufacturing formaldehyde condensation products of phenols. 6024. March 1.
Billard, P. Introduction of solid particles in suspension into gases. 6173. March 2. (France, April 25, 1921).
Bloxam, A. G. (Chemische Fabrik Griesheim-Elektron). Manufacture of azo dye-stuffs. 6256. March 2.
Blumenfeld, J. Production of titanic acid. 6086. March 1.
British Dyestuffs Corporation, Ltd., Oxley, H. P., and Green, A. G. Separating alkylamines from ammonia, &c. gases. 6488. March 4.
Carpmael, W. (Farbenfabriken vorm. F. Bayer & Co.). Manufacture of vat dye-stuffs. 5819. February 27.
Cassella & Co., L., and Ransford, R. B. Manufacture of vat dye-stuffs of the anthraquinone series. 5820. February 27.
Cordes & Co. Process for manufacture of light-proof lithopone. 6348. March 3. (Germany, May 4, 1921.)
Dibdin, W. J. Purification of waste organic liquids. 6389. March 4.
Du Vallon, H. C. de J. Fertilisers, insecticides, &c. 6466. March 4.
Freeman, N. H. Process for fractional distillation of mineral oils and spirits from substances containing same. 5899. February 28.
Freeman, N. H. Manufacture of liquid fuels. 6351. March 3.
Hanna, R. W. Process for continuous production of low-boiling point hydrocarbons from petroleum oils. 5784. February 27.
Hull Oil Manufacturing Co., Ltd. and Holdcroft, G. F. Bleaching fats, fatty oils, and fatty acids. 6313. March 3.
Kiesewalter, A. Process for production of calcium hydride. 5758. February 27. (Germany, March 4, 1921.)
Woodall, Duckham, & Jones (1920) Ltd. and Morgan J. S. Separating oxygen from atmospheric air. 6080. March 1.
Norsk Hydro-Elektrisk. Kvælstofaktieselskab. Process for manufacture of hydrogen, carbonic oxide, or mixture of these gases. 6377. March 3. (Norway, March 9. 1921.)
Ridge, H. M. Purification of oils. 6479. March 4.
Siddall, T. A. Machine for extracting essential oils from citrus fruits. 6033. March 1.
Sidebottom, R. B. Harvesting machines. 6181. March 2.
Steenbergh, B. van. Apparatus for cracking mineral oil to produce gasolene. 5743. February 27.
Techno-Chemical Laboratories, Ltd. and Testrup, N. Separation of liquid from other matter. 6473. March 4.

Patents Court Cases

APPLICATION has been made by A. T. Birkby and F. E. Birkby, of Woodfield Mills, Liversedge, Yorks, under Rule 7 of the Patents)Treaty of Peace) Rules, 1920, for the grant of licences in respect of the following patents: 1921/1908 (Insoluble condensation products of phenols and formaldehyde); 1922/1908 (Impregnation of wood and other fibrous or cellular materials); 21,566/1908 (Condensation products and method of making same); 26,614/1911 (Cardboard and method of making same); 6293/1912 and 6294/1912 (Varnishes and method of preparing same); all are in the name of L. H. Baekeland. Any notice of opposition must be given by April 7, 1922.

Market Report and Current Prices

Our Market Report and Current Prices are exclusive to THE CHEMICAL AGE, *and, being independently prepared with absolute impartiality by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., may be accepted as authoritative. The prices given apply to fair quantities delivered ex wharf or works, except where otherwise stated. The weekly report contains only commodities whose values are at the time of particular interest or of a fluctuating nature. A more complete report and list are published once a month. The current prices are given mainly as a guide to works managers, chemists, and chemical engineers; those interested in close variations in prices should study the market report.*

LONDON, MARCH 9, 1922.

QUITE a steady business is reported during the current week and the improvement in turnover is maintained.

Home trade buyers, generally speaking, restrict their purchases to spot supplies and these are becoming very short in a number of instances and prices generally are harder.

Export business remains slow, buyers' limits being generally below current market quotations.

General Chemicals

ACETONE is in strong demand and high prices are paid for spot and early delivery.

ACID ACETIC is again firm with active competition for stocks.

ACID FORMIC remains in better demand, and the price is higher.

ACID LACTIC is a rather slow market but very firm in price.

ACID OXALIC is dearer and stocks have practically disappeared.

ACID TARTARIC.—The better demand is still apparent but the general tendency remains uncertain.

BLEACHING POWDER.—The home markets are fully occupied and the uptake is very satisfactory. Export demand is quiet.

CALCIUM CARBIDE is unchanged.

COPPER SULPHATE remains uninteresting and little business is reported.

FORMALDEHYDE is rather easier on foreign offering. Stocks, however, are not excessive.

LEAD ACETATE is in very poor demand, but the price seems to have touched bottom.

LEAD NITRATE remains unchanged.

LITHOPONE has been in more request. Price unchanged.

POTASSIUM CAUSTIC.—The market remains overstocked.

POTASSIUM PRUSSIATE is a firm market and again exhibits an upward tendency.

SODIUM ACETATE.—A satisfactory turnover is reported at recent figures.

SODIUM BICHROMATE remains in buyers' favour with considerable second-hand realisation.

SODIUM CHLORATE is slow of sale. Stocks are firmly held.

SODIUM NITRITE remains uninteresting.

SODIUM PRUSSIATE is extremely scarce for early delivery. English makers are, in fact, well sold over the whole year.

Coal Tar Intermediates

THERE is little bulk business about as yet, but this market has been more interesting during the past week, both on home and export account. Certain products seem to be in short supply on the Continent, and the British and foreign prices are gradually approximating to one another.

ALPHA NAPHTHOL is only in moderate demand, but makers' stocks are short, and increasing firmness may be anticipated unless manufacturing is restarted.

ALPHA NAPHTHYLAMINE in second hands is slightly weaker, but works price is unchanged.

ANILINE OIL AND SALT are steady at last-quoted figures.

BENZIDINE BASE.—Some home business is passing.

BETA NAPHTHOL has been in some request but is the turn weaker on the appearance of some fresh re-sale parcels.

CROCEINE ACID.—A small business is being done.

DIMETHYLANILINE is in demand with price firm.

DINITROCHLORBENZOL displays an upwards tendency with a fair inquiry about.

DIPHENYLAMINE is in demand, with stocks light, but price is without change.

" H " ACID is interesting and small stocks are firmly held.

METAPHENYLENEDIAMINE has been inquired for.

MONOCHLORBENZOL is in request on export account.

NEVILLE & WINTHER ACID is in considerable demand.

PARAPHENYLENEDIAMINE is without change.

" R " SALT is featureless.

TOBIAS ACID has received some interest on home account.

Coal Tar Products

THERE is little change in the position of most coal tar products from last week, and prices generally continue to have a downward tendency.

90's BENZOL is quiet and can be bought at 2s. 3d. on rails.

PURE BENZOL is also in poor demand and is worth 2s. 7d. on rails in the Midlands and 2s. 11d. in the South.

CREOSOTE OIL is plentiful and can be bought at 4d. to 4¼d. per gallon in the North and 4¾d. to 5d. in the South.

CRESYLIC ACID is inactive, the pale quality being worth 2s. per gallon on rails and the dark quality, 95/97%, 1s. 9d. on rails.

SOLVENT NAPHTHA is also fairly quiet, and is worth 2s. 3d. to 2s. 4d. on rails at works.

HEAVY NAPHTHA is also weak and is not worth more than 2s. per gallon.

NAPHTHALENE is in poor demand. Crude qualities being worth £5 to £7, and the Refined from £15 to £17 per ton.

PITCH.—The market remains firm, but buyers abroad are hesitating to pay the present prices in the hope that they will be able to cover their requirements later on at a lower figure. To-day's values are 75s. to 77s. 6d. f.o.b. London; 70s. to 72s. 6d. f.o.b. East Coast.

Sulphate of Ammonia

THERE are no new features to report. The demand for home consumption remains active.

Current Prices

Chemicals

	Per	£	s.	d.		£	s.	d.
Acetic anhydride	lb.	0	1	10	to	0	2	0
Acetone oil	ton	87	10	0	to	90	0	0
Acetone, pure	ton	80	0	0	to	82	10	0
Acid, Acetic, glacial, 99-100%	ton	55	0	0	to	60	0	0
Acetic, 80% pure	ton	47	0	0	to	48	0	0
Arsenic	ton	90	0	0	to	95	0	0
Boric, cryst	ton	60	0	0	to	70	0	0
Carbolic, cryst. 39-40%	lb.	0	0	6½	to	0	0	7
Citric	lb.	0	1	11	to	0	2	0
Formic, 80%	ton	72	10	0	to	75	0	0
Gallic, pure	lb.	0	3	6	to	0	3	9
Hydrofluoric	lb.	0	0	8½	to	0	0	9
Lactic, 50 vol	ton	40	0	0	to	43	0	0
Lactic, 60 vol	ton	43	0	0	to	45	0	0
Nitric, 80 Tw	ton	30	0	0	to	31	0	0
Oxalic	lb.	0	0	8½	to	0	0	9
Phosphoric, 1.5	ton	43	0	0	to	45	0	0
Pyrogallic, cryst	lb.	0	6	9	to	0	7	0
Salicylic, Technical	lb.	0	0	10½	to	0	1	0
Salicylic, B.P	lb.	0	1	4	to	0	1	6
Sulphuric, 92-93%	ton	8	0	0	to	8	10	0
Acid Tannic, commercial	lb.	0	2	9	to	0	3	0
Tartaric	lb	0	1	3	to	0	1	4
Alum, lump	ton	12	10	0	to	13	0	0
Alum, chrome	ton	30	10	0	to	32	0	0
Alumino ferric	ton	9	0	0	to	9	10	0
Aluminium, sulphate, 14-15%	ton	12	0	0	to	13	0	0
Aluminium, sulphate, 17-18%	ton	13	10	0	to	14	10	0
Ammonia, anhydrous	lb.	0	1	8	to	0	1	10
Ammonia, .880	ton	35	0	0	to	37	0	0
Ammonia, .920	ton	22	0	0	to	24	0	0
Ammonia, carbonate	lb.	0	0	4	to		—	
Ammonia chloride	ton	60	0	0	to	65	0	0
Ammonia, muriate (galvanisers)	ton	35	0	0	to	37	10	0
Ammonia, nitrate	ton	55	0	0	to	60	0	0
Ammonia, phosphate	ton	90	0	0	to	95	0	0
Ammonia, sulphocyanide	lb.	0	3	0	to		—	
Amyl acetate	ton	160	0	0	to	165	0	0
Arsenic, white, powdered	ton	42	0	0	to	44	0	0
Barium, carbonate, 92-94%	ton	12	10	0	to	13	0	0

	Per	£	s.	d.		£	s.	d.
Barium, Chlorate	lb.	0	0	11	to	0	1	0
Chloride	ton	14	10	0	to	15	10	0
Nitrate	ton	40	0	0	to	42	0	0
Sulphate blanc fixe, dry	ton	24	0	0	to	25	0	0
Sulphate, blanc fixe, pulp	ton	15	0	0	to	16	0	0
Sulphocyanide, 95%	lb.	0	1	6	to		—	
Bleaching powder, 35-37%	ton	14	0	0	to		—	
Borax crystals	ton	29	0	0	to	33	0	0
Calcium acetate, Brown	ton	8	0	0	to	9	0	0
" " Grey	ton	10	0	0	to	11	0	0
Calcium Carbide	ton	16	0	0	to	17	0	0
Chloride	ton	7	10	0	to	8	0	0
Carbon bisulphide	ton	60	0	0	to	62	0	0
Casein, technical	ton	75	0	0	to	80	0	0
Cerium oxalate	lb.	0	3	6	to	0	3	9
Chromium acetate	lb.	0	1	1	to	0	1	3
Cobalt acetate	lb.	0	11	0	to	0	11	6
Oxide, black	lb.	0	10	6	to	0	11	0
Copper chloride	lb.	0	1	3	to	0	1	6
Sulphate	ton	28	10	0	to	29	0	0
Cream Tartar, 98-100%	ton	120	0	0	to	125	0	0
Epsom salts (*see* Magnesium sulphate)								
Formaldehyde, 40% vol	ton	75	0	0	to	77	0	0
Formusol (Rongalite)	lb.	0	3	9	to	0	4	0
Glauber salts, commercial	ton	4	5	0	to	4	10	0
Glycerine, crude	ton	70	0	0	to	72	10	0
Hydrogen peroxide, 12 vols	gal.	0	2	5	to	0	2	6
Iron perchloride	ton	30	0	0	to	32	0	0
Iron sulphate (Copperas)	ton	4	0	0	to	4	5	0
Lead acetate, white	ton	45	0	0	to	47	0	0
Carbonate (White Lead)	ton	40	0	0	to	44	0	0
Nitrate	ton	48	10	0	to	50	10	0
Litharge	ton	35	10	0	to	36	0	0
Lithopone, 30%	ton	26	0	0	to	27	0	0
Magnesium chloride	ton	10	10	0	to	11	0	0
Carbonate, light	cwt.	2	10	0	to	2	15	0
Sulphate (Epsom salts commercial)	ton	8	10	0	to	9	10	0
Sulphate (Druggists')	ton	13	10	0	to	14	10	0
Manganese, Borate	ton	70	0	0	to	75	0	0
Sulphate	ton	70	0	0	to	75	0	0
Methyl acetone	ton	85	0	0	to	90	0	0
Alcohol, 1% acetone	ton	75	0	0	to	77	10	0
Nickel sulphate, single salt	ton	61	0	0	to	62	0	0
Ammonium sulphate, double salt	ton	62	0	0	to	64	0	0
Potash, Caustic	ton	34	0	0	to	35	0	0
Potassium bichromate	lb.	0	0	7¼	to		—	
Carbonate, 90%	ton	31	0	0	to	33	0	0
Chloride 80%	ton	15	0	0	to	20	0	0
Chlorate	lb.	0	0	4½	to	0	0	5
Meta bisulphite, 50-52%	ton	84	0	0	to	90	0	0
Nitrate, refined	ton	45	0	0	to	47	0	0
Permanganate	lb.	0	0	9	to	0	0	10
Prussiate, red	lb.	0	3	0	to	0	3	3
Prussiate, yellow	lb.	0	1	2	to	0	1	2½
Sulphate, 90%	ton	20	0	0	to	22	0	0
Salammoniac, firsts	cwt.	3	5	0	to		—	
Seconds	cwt.	3	0	0	to		—	
Sodium acetate	ton	25	0	0	to	26	0	0
Arsenate, 45%	ton	45	0	0	to	48	0	0
Bicarbonate	ton	10	10	0	to	11	0	0
Bichromate	lb.	0	0	5½	to		—	
Bisulphite, 60-62%	ton	25	0	0	to	27	10	0
Chlorate	lb.	0	0	3¾	to	0	0	4
Caustic, 70%	ton	24	0	0	to	24	10	0
Caustic, 76%	ton	25	10	0	to	26	0	0
Hydrosulphite, powder, 85%	lb.	0	2	3	to	0	2	6
Hyposulphite, commercial	ton	13	10	0	to	14	0	0
Nitrite, 96-98%	ton	37	10	0	to	40	0	0
Phosphate, crystal	ton	20	10	0	to	21	0	0
Perborate	lb.	0	1	2	to	0	1	3
Prussiate	lb.	0	0	9½	to	0	0	10
Sulphide, crystals	ton	13	0	0	to	14	0	0
Sulphide, solid, 60-62%	ton	24	10	0	to	25	0	0
Sulphite, cryst	ton	13	0	0	to	14	0	0
Strontium carbonate	ton	60	0	0	to	65	0	0
Strontium Nitrate	ton	60	0	0	to	62	10	0
Strontium Sulphate, white	ton	7	10	0	to	8	10	0
Sulphur chloride	ton	25	0	0	to	27	10	0
Sulphur, Flowers	ton	13	0	0	to	14	0	0
Roll	ton	13	0	0	to	14	0	0
Tartar emetic	lb.	0	1	6½	to	0	1	7
Tin perchloride, 33%	lb.	0	1	2	to	0	1	4
Perchloride, solid	lb.	0	1	5	to	0	1	7
Protochloride (tin crystals)	lb.	0	1	5	to	0	1	6
Zinc chloride, 102 Tw	ton	21	0	0	to	22	10	0
Chloride, solid, 96-98%	ton	35	0	0	to	40	0	0
Oxide, 99%	ton	38	0	0	to	40	0	0
Dust, 90%	ton	47	10	0	to	50	0	0
Sulphate	ton	18	10	0	to	19	10	0

Coal Tar Intermediates, &c.

	Per	£	s.	d.		£	s.	d.
Alphanaphthol, crude	lb.	0	2	3	to	0	2	6
Alphanaphthol, refined	lb.	0	2	9	to	0	3	0
Alphanaphthylamine	lb.	0	2	0	to	0	2	3
Aniline oil, drums extra	lb.	0	1	0	to	0	1	1
Aniline salts	lb.	0	1	1	to	0	1	2
Anthracene, 40-50%	unit	0	0	8½	to	0	0	9
Benzaldehyde (free of chlorine)	lb.	0	3	9	to	0	4	3
Benzidine, base	lb.	0	5	9	to	0	6	0
Benzidine, sulphate	lb.	0	5	9	to	0	6	0
Benzoic acid	lb.	0	1	7½	to	0	1	9
Benzoate of soda	lb.	0	1	6	to	0	1	7
Benzyl chloride, technical	lb.	0	2	0	to	0	2	3
Betanaphthol benzoate	lb.	0	4	9	to	0	5	0
Betanaphthol	lb.	0	1	9	to	0	2	0
Betanaphthylamine, technical	lb.	0	6	0	to	0	7	0
Croceine Acid, 100% basis	lb.	0	3	6	to	0	3	9
Dichlorbenzol	lb.	0	0	9	to	0	0	10
Diethylaniline	lb.	0	2	9	to	0	3	0
Dinitrobenzol	lb.	0	1	3	to	0	1	4
Dinitrochlorbenzol	lb.	0	0	10	to	0	1	0
Dinitronaphthaline	lb.	0	1	4	to	0	1	5
Dinitrotoluol	lb.	0	1	5	to	0	1	6
Dinitrophenol	lb.	0	2	9	to	0	3	0
Dimethylaniline	lb.	0	2	6	to	0	2	9
Diphenylamine	lb.	0	6	4	to	0	0	4
H-Acid	lb.	0	6	6	to	0	7	0
Metaphenylenediamine	lb.	0	5	6	to	0	5	9
Monochlorbenzol	lb.	0	0	10	to	0	1	0
Metanilic Acid	lb.	0	6	0	to	0	6	6½
Monosulphonic Acid (2.7)	lb.	0	5	6	to	0	6	0
Naphthionic acid, crude	lb.	0	3	3	to	0	3	6
Naphthionate of Soda	lb.	0	3	3	to	0	3	6
Naphthylamin-di-sulphonic-acid	lb.	0	4	0	to	0	4	3
Nitronaphthalene	lb.	0	1	4	to	0	1	5
Nitrotoluol	lb.	0	1	0	to	0	1	2
Orthoamidophenol, base	lb.	0	10	0	to	0	10	5
Orthodichlorbenzol	lb.	0	1	0	to	0	1	1
Orthotoluidine	lb.	0	1	6	to	0	1	9
Orthonitrotoluol	lb.	0	0	10	to	0	1	0
Para-amidophenol, base	lb.	0	10	0	to	0	10	6
Para-amidophenol, hydrochlor	lb.	0	10	6	to	0	11	0
Paradichlorbenzol	lb.	0	0	6	to	0	0	7
Paranitraniline	lb.	0	3	6	to	0	3	9
Paranitrophenol	lb.	0	2	3	to	0	2	6
Paranitrotoluol	lb.	0	5	0	to	0	5	3
Paraphenylenediamine, distilled	lb.	0	11	0	to	0	11	6
Paratoluidine	lb.	0	7	0	to	0	7	6
Phthalic anhydride	lb.	0	2	9	to	0	3	0
Resorcin, technical	lb.	0	5	6	to	0	6	0
Resorcin, pure	lb.	0	7	0	to	0	7	3
Salol	lb.	0	2	4	to	0	2	6
Sulphanilic acid, crude	lb.	0	1	0	to	0	1	1
Tolidine, base	lb.	0	6	6	to	0	7	0
Tolidine, mixture	lb.	0	2	6	to	0	2	9

Potash

SUPPLIES of potash salts are being bought up readily, but the demand is almost entirely for the cheaper grades available. On a unit basis the following are the approximate prices per unit now ruling :

	s.	d.
Kainit 14% (K_2O)	3	9
Sylvinite 20% (K_2O)	3	7
Sylvinite 30% (K_2O)	3	7
Muriate of Potash 50% (K_2O)	5	0
Sulphate of Potash 90% purity	6	0

Kainit is generally sent forward with an average of 15% potash, and in some cases cargoes showing as much as 16% of potash are being sold on a basis of 14%. The following prices are quoted per ton f.o.r. in bags, London :

	£	s.	d.
Kainit 14% (K_2O)	2	12	6
Sylvinite 20%	3	12	6
Sylvinite 30%	5	12	6
Muriate of Potash 50% (K_2O)	10	10	0
Sulphate of Potash 90% purity	14	10	0

As these prices have remained fairly steady during the past month there is little likelihood of a reduction during the spring fertiliser seasons.

There is no apparent slackening in the demand for potash fertilisers, and especially for kainit and sulphate of potash. The sales of sulphate of potash this season have been exceptionally good, and there is a growing demand for this type of potash fertiliser also in Scotland, where in pre-war days it was used only to a relatively small extent.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

GLASGOW, MARCH 8, 1922.

BUSINESS has been fairly good during the week. Alkali products were in better request, and shipping inquiries more plentiful.

There are no changes in price of any importance to report. German chemicals for spot or near delivery are inclined to harden in consequence of the railway strike.

In coal tar and intermediate products there is nothing special to report.

Industrial Chemicals

ACETONE.—A little inquiry with prices unchanged around £70 per ton, drums included.

ACID ACETIC.—Stocks light. Glacial firm at £56 to £57 ex wharf.

ACID BORACIC.—Steady local inquiry. Crystal or granulated £60, powdered £62, ton lots.

ACID HYDROCHLORIC.—No change in price; consumers' requirements still very low.

ACID HYDROFLUORIC.—Slight inquiry, 60%, 9d. to 9¼d.; 30%, 4¾d. to 5d. per lb.

ACID NITRIC, 80°.—Small local sales. Price remains unchanged at £25 10s.

ACID OXALIC.—Continental makers quoting slightly cheaper at 8¼d. to 8½d. per lb. c.i.f. U.K.

ALUM POTASH (LUMP).—Slight inquiry, but little business done. Price £14 to £15 10s. f.o.r.

AMMONIA: NITRATE.—Supplies scarce, price nominal at £24 per ton.

AMMONIA: SALAMMONIAC (CRYSTALS).—In slight demand. Price a little lower at £61 per ton.

AMMONIA: SULPHATE.—Visible supplies short, price likely to go up for near delivery.

ARSENIC.—A few inquiries but little business passing. Price £41 to £42 ex quay.

BARYTES.—Home product still in fair demand. Prices, Fine White Quality £6, Grey £4 f.o.r. works. Continental makers offering same prices c.i.f. U.K. ports.

BLEACHING POWDER.—Little movement, no change in home prices to record. Some cheap spot lots of German make offered this week at £12 per ton c.i.f. U.K. ports.

CALCIUM CHLORIDE.—Solid, in drums, no change at £7 10s. per ton. German sellers quoting cheaper but delivery doubtful.

COPPER SULPHATE.—Some inquiries for export. Price £26 to £27 per ton f.o.b.

COPPERAS, GREEN.—Slight local demand. Price remains about £5 f.o.r. in bags.

EPSOM SALTS (COMMERCIAL).—Offered at £7 per ton delivered.

LEAD NITRATE.—British make offering at £45 10s. per ton carriage paid.

MAGNESITE (GROUND CALCINED).—Price remains unchanged at £12 10s. f.o.r. Very little demand.

MAGNESIUM CHLORIDE.—Continental makers quoting lower at £6 10s. to £6 15s. c.i.f. U.K. Spot lots to be bought at £8 to £8 10s. ex station.

POTASSIUM BICHROMATE.—Very little demand. Price remains unchanged at 7½d. per lb. American make offering in competition.

POTASSIUM CARBONATE.—88/92%, slight inquiry, but little business done at £26 to £27 per ton.

POTASSIUM CAUSTIC.—88/92%, Continental makers quoting £31 to £32 per ton c.i.f., spot lots £34 ex station.

POTASSIUM CHLORATE.—Practically no demand. Price about 5d. per lb.

POTASSIUM PERMANGANATE.—Slight inquiry. Price about 8½d to 9d. per lb.

SODIUM BICHROMATE.—Small demand. Home price 5¼d. per lb. American make offering in competition.

SODIUM CARBONATE (REFINED ALKALI).—Makers advise a reduction of 2s. 6d. per ton. Spot lots now £9 12s. 6d. ex quay.

SODIUM CAUSTIC.—70/72%, home makers' prices remain unchanged, but spot lots on offer at £22 to £23 per ton; 76/77%, £25 10s. per ton ex station; 98%, powdered and flake £29 to £30 per ton ex station.

SODIUM CARBONATE (SODA CRYSTALS).—Price remains unchanged at £6 10s. per ton ex station.

SODIUM HYPOSULPHITE.—Steady local demand. Commercial quality £14 per ton ex store. Pea crystals £19 per ton ex store. Continental makers quoting commercial at £12 10s. c.i.f. U.K. ports.

SODIUM NITRITE, 100%.—Moderate inquiry at £31.

SODIUM SILICATE, 140°.—Slight inquiry for small lots. Price unchanged at £12 10s. to £13 per ton ex station.

SODIUM SULPHATE, 95% (SALTCAKE).—Price remains unchanged at £4 per ton f.o.b. Only small quantities available.

SODIUM SULPHIDE (CRYSTALS, 30/32%).—Practically no demand. Price nominal. £13 f.o.r. works.

SODIUM SULPHITE (CRYSTALS).—£14 ex station.

SULPHUR.—Sicilian Flowers £14 per ton, Sicilian Rock £12 per ton, Sicilian Roll £13 per ton, Sicilian Ground £13 per ton; prices nominal, demand still very poor and Sicilian quotations falling. Sicilian Thirds, Government stocks still available at attractive prices.

ZINC SULPHATE.—A few inquiries but little business done. Price £19 to £19 10s. ex station.

WAXES (PARAFFIN WAX AND SCALE).—Very little movement. Imports light, American quotations dearer.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Coal Tar Intermediates and Wood Distillation Products

AMIDO NAPHTHALENE SULPHONIC ACID.—Some inquiry for the home trade. Price quoted 3s. 9d. per lb. on 100% basis, carriage paid, casks included.

ANTHRANILIC ACID.—Small home inquiries. Price firm at 10s. per lb., 100% basis, delivered.

BETA NAPHTHOL.—Prices now reduced by English makers. Offered at 1s. 5d. per lb., carriage paid, casks included.

DIMETHYLANILINE.—A few inquiries for the home market. Price 2s. 9d. per lb. delivered, in returnable drums. Also inquiries for export. Price quoted, 2s. 10d. per lb. f.o.b., drums included.

DINITROCHLORBENZOL.—Export inquiries. Price quoted, £90 per ton, f.o.b. English port, drums included.

"H" ACID.—A few inquiries for the home market. Price quoted, 7s. per lb., 100% basis, carriage paid.

ORTHONITROTOLUOL.—An inquiry for the home trade. Price quoted, 1s. per lb., delivered.

ORTHO TOLUIDINE.—Some inquiry for the home trade. Price quoted, 1s. 6d. per lb., carriage paid.

PARA AMIDO PHENOL BASE.—Inquiry for the home market. Offered at 7s. 6d. per lb. on 100% basis, carriage paid.

Electrolytic Corrosion of Bismuth

AT a meeting of the Nottingham Section of the Society of Chemical Industry on Wednesday, March 1, Dr. E. B. R. Prideaux and Mr. H. Hewis, B.Sc., read a paper embodying the results of their experiments on the electrolytic corrosion of bismuth. The metal is made with the anode in a solution of sodium nitrate, the cathode being a strip of nickel in dilute caustic soda. Under these conditions the metal is dissolved with a current efficiency of 100 per cent., and is precipitated as the oxynitrate. It can also be obtained in solution by this method, and from the solution the orthohydroxide $Bi(OH)_3$, and hence various salts with organic acids can be prepared. The substance xeroform, or bismuth tribromphenate, was the subject of a special investigation.

Mr. Wilkie called attention to the necessity for lightness in pharmaceutical preparations and gave some details on analysis.

Mr. Collett then gave an account of his visit to Canada and subsequent participation in the annual meeting of the Society of Chemical Industry. At the meetings he was much impressed with the value of the kinematograph in exhibiting manufacturing processes.

German Chemical Trade Notes

FROM OUR OWN CORRESPONDENT.

Berlin, March 6, 1922.

DURING February the dye and pharmaceutical chemical industries have been well placed with orders and in spite of the advancement of prices no slackening was noted as compared with the previous month. Many orders were placed in anticipation of further price increases. Business in the former Austrian States and Finland has declined, while in Holland and Scandinavia the demand has somewhat increased. In Switzerland a sharp competition is brought about by inland products, and steps are being taken to prevent the importation of German goods. Great expectations are placed on an expected boom in the U.S.A. textile industry. American competition in Japan is strongly felt, while Japanese goods are only produced by a few large firms, many of the smaller ones having been closed down.

The heavy chemical market has been fluctuating, there having been a lack of confidence on the part of wholesale dealers. Complaints have been made in regard to supplies of soda and caustic soda, the scarcity of which is said to be seriously affecting the chemical industry. The Aniline Trust has advanced its prices by about 30 per cent. owing to rising overhead costs. Railway rates have advanced and will inevitably lead to higher prices for all chemical products.

The market for industrial chemicals has shown more activity during the last week, but actual business passing is confined to moderate orders. Stocks appear to have diminished considerably. The position is rather uncertain, and no special interest is shown for any products. Price developments continue to be upwards.

Acids are moving along more active lines, following the other markets. The following quotations are given in marks per kilogram (d. = domestic price; e. = export price):

ACIDS: Acetic 80% is hardly offered at 28 mk. d., 26/31.50 mk. e.; Glacial, 98/100%, continues to be scarce on a firm market at 40 mk. d., 50 mk. e.; technical, 30%, 10 mk. d. Acetyl-Salicylic, 225/235 mk. d.; 290 mk. e. Arsenic, pure, powder, 53/54 mk. d. Benzoic, 70 mk. d., 75 mk. e.; crystallised, 115 mk. d.; sublimed, 450 mk. d. synthetic, 65 mk. d. Boric is quoted at 64 mk. d. for crystals, and 65 mk. d. for powder and flakes. Butyric, pure, 50%, 75 mk. d.; absolutely pure, 500 mk. d. Chromic, technical, 40/45%, 34 mk. d.; pure 80/85%, 65 mk. d. Cinnamic, 240 mk. d. Citric has a firm tendency with prices inclined to rise at 215/225 mk. d., 240 mk. e. Formic, 85%, 21.50 mk. d., excluding carboys. Gallic, crystals, 270 mk. d.; powder, 280 mk. d. Hydrobromic, 25%, 25 mk. d. Hydrochloric, absolutely pure, 5.50/6 mk. d.; crude, 20/22° Bé., 2.75/3.25 mk. d. Hydrocyanic, 2%, 29 mk. d.; 10%, 95 mk. d. Hydrofluoric, 50/55%, fuming, 23/24 mk. d. Iodic, crystallised, 1,600 mk. d.; anhydrous, 1,800 mk. d. Lactic, pure white, 25° Bé., 108 mk. d.; Molybdic, pure, 220 mk. d. Nitric, 36°, refined, 7.42 mk. d.; 40°, 9.75 mk. d., in carboys. Oxalic, 98/100%, 44 mk. d., 60 mk. e. Phosphoric, glacial, 140 mk. d.; 83%, 50 mk. d.; 20%, 15/16 mk. d. Pyrogallic, crystals, 525 mk. d. Sulphuric, crude, 66°, 5.25 mk. d.; pure, 10 mk. d. Tannic, technical, powder, 165/200 mk. d.; light, 225/240 mk. d. Tartaric, lead-free, 100 mk. d.; chemically pure, 110 mk. d. The market shows a firm tendency with increased activity both for home and export. Tungstic, absolutely pure, 230 mk. d. Valerianic, monohydrate, 525 mk. d. Acetyl chloride, technical, 135 mk. d. Alum, ammonia, 9 mk. d. Potash, chrome, 15 mk. d. Potash, crystal powder, 7.50/8.50 mk. d., 10 mk. e. Alumina sulphate, in brisk demand, 14/15%, 4.20 mk. d., 6 mk. e.; 17/18%, 8.25 mk. e. Aluminium Hydrate, powder, 23 mk. d. Ammonium Fluoride, 45 mk. d. Ammonium Nitrate, pure, 28 mk. d.; technical, 15 mk. d. Ammonium Sulphocyanide, 56/67 mk. d. Ammoniac Sal, A1 quality, crystallised, 98/100%, 24/27 mk. d., 30 mk. e.; in lumps 42 mk. d. Antimony, 33/41 mk. d.; Chloride, 75 mk. d.; Oxide, 80 mk. d. Arsenic, white, 31/43 mk. d.; red, 66 mk. d. Barium Binoxide, anhydrous, technical, 6 mk. d.; pure, 12 mk. d. Carbonate, 4.50 mk. d.; precipitated, 10 mk. d. Chloride, 10.50 mk. d. Bleaching Powder, 33/36%, 7.25 mk. d. Borax, 3.25 mk. d. Calcium Carbonate, 7.50 mk. d. Carbide (about 80%), 8/11 mk. d.; Chloride, 70/75%, 6/9.50 mk. d. Carbon Bisulphide, 21 mk. d. Tetrachloride, 31 mk. d. Chlorine, liquid, 3.50 mk. d. Copperas, 3 mk. d., 4.50 mk. e. Copper Sulphate, 98/99%, big crystals, for March-April delivery, 25 mk. d., incl. package. Ethyl Acetate, 81/85 mk. d., tax-paid. Ferric Chloride, pure, dry, 13.50 mk. d. Fluorspar, powdered, 33 mk. d. Glauber's Salt, crystallised, 2.30 mk. d., 3 mk. e., in brisk demand. Iron Nitrate, crystals, 30 mk. d. Lime Acetate, pure, dry, 36 mk. d. Magnesium Chloride, 5.40 mk. e. Nickel Oxide, 210 mk. d. Phosphorus, red, 77/82 mk. d.; yellow, 77/80 mk. d. Pentasulphide, 92 mk. d. Trisulphide, 82 mk. d. Potassium Chlorate, 24 mk. d., 27 mk. e. Potassium Cyanide, 98/100%, 76/81 mk. d.; 60%, 58 mk. d.; 30%, 42 mk. d. Potash Metabisulphite, spot lots hardly obtainable; demand brisk, at 32/34 mk. d., 35/37 mk. e. Salt Cake, 2.90 mk. d., 3.80 mk. e. Sodium Acetate, 25/28 mk. d. Bisulphate, technical, 8 mk. d. Chlorate, technical, 19 mk. d. Cyanide, 129/130%, 62 mk. d. Nitrite, 53/57 mk. d. Phosphate, crystallised, 18/26 mk. d. Silicate, crystallised, pure, 24 mk. d. Sulphite, technical, 4.50 mk. d. Soda Ash—the Syndicate's price for March is 3.60 mk. d. in car loads; caustic, 22 mk. e.; caustic liquid, 43°, 2.90 mk. d.; 50°, 3.25 mk. d. Sulphide, 30/32%, 11 mk. d.; 60/62%, 16/17 mk. d., 17/18 mk. e. Sulphur, lumps, 10 mk. d.; chloride, 8.50 mk. d. Tin Oxide, white, 165 mk. d. Zinc, Carbonate, pure, 42 mk. d.; chloride, technical, liquid, 50° Bé., iron free, 12/16 mk.; dry powder, 24 mk. Dust, 19 mk. d. Sulphate, crude, 10 mk. d.

The firm tendency in coal tar products and intermediates has induced holders to keep back offerings. Coal prices have again advanced, and further increases are expected. Quotations are as follow:

Naphthalene, crude, 225/235 mk. per 100 kilogs. d. Acetanilide, white, pure, crystallised, 100 mk. d.; powdered, 105 mk. d. Alpha Naphthol, crystallised, 100 mk. d., technical, 65 mk. d. Alpha-naphthylamine, pure, 300 mk. d. Aniline, 55 mk. d. Anthracene, pure, 45 mk. d. Benzaldehyde, technical, 68 mk. d. Beta-naphthol, pure, sublimed, 86/100 mk. d.; technical, 49/58 mk. d. Betanaphthylamine, pure, 225 mk. d. Diphenylamine, crystallised, pure, 200 mk. d.; technical, 100 mk. d.

The situation in regard to paint materials has shown some improvement. Speculation is active and stockholders are reluctant. The present quotations are:

Bone Glue, 40-41 mk. d. Lead, White, 14 mk. e. Sugar of Lead, 28 mk. d., 30 mk. e. Lithopone, red seal, 30%, is sold at 15 mk. d.

Zinc White.—The syndicate has issued new advanced prices; white seal is sold at 30.80 mk. d.; green seal, 29 mk. d.; red seal, 28.30 mk. d.

Producer and Other Gases

Modern By-Product Recovery Producers

AT a meeting of the Newcastle Section of the Society of Chemical Industry, held on March 1, Mr. N. E. Rambush dealt at length with various types of producers and compared the utilisation efficiency of producer gas with other gases. Dr. J. H. Paterson was in the chair.

At the outset, Mr. Rambush, by means of lantern slides, described the various types of gas-producers, including the liquid slag producer without water seal grate, and various static and mechanical producers. Such details as the size and shape of the feed hopper and other mechanical devices for charging and poking the furnaces were dealt with extensively. The question of the utilisation of waste heat was also mentioned. Mr. Rambush dealt at length with the more modern by-product recovery producers of the Mond and similar types. In this connexion he dealt exhaustively with various types of dust-cleaning and tar-removal devices. The main portion of the paper dealt with the composition and application of the gas to furnaces and for heating purposes. The feature of the lecture was a series of slides showing the novel curves and tables prepared by Mr. Rambush for rapidly and accurately estimating comparative values of various gases. He dealt with the quantity of heat lost in the exit gas and showed in the curves that the amount of air required for complete combustion had a great effect on the heat lost in this way. He insisted that the time factor in combustion, and, indeed, in many industrial processes, was much more important than had generally been supposed. He was of the opinion that the statistics of the text-books were not very valuable in that respect, because they had not given sufficient recognition to the factors affecting the time to achieve combustion.

An interesting discussion followed, in which Dr. J. H. Paterson, Dr. G. Weyman, Dr. A. Fleck and Mr. G. Hewson took part.

Unauthorised Use of "F.I.C."

THE attention of the Council of the Institute of Chemistry has lately been called to the unauthorised use of the letters "F.I.C." by persons other than Fellows of the Institute. The Council are aware that these initials are occasionally attached in error and by some in inadvertence, to the names of authors of published papers; but they have had to deal with a case in which a person, not a Fellow of the Institute, made use of the letters "F.I.C." in applying for a chemical appointment. The Council state they will be indebted to any members directing attention to similar cases of misrepresentation.

Company News

SALT UNION, LTD.—The directors announce a dividend of 2s. 4d. per share on the preference and 1s. per share on the ordinary shares for 1921, leaving to be carried forward £21,500.

ELECTRO BLEACH AND BY-PRODUCTS, LTD.—The profit for 1921, after providing for depreciation, income-tax, and corporation profits tax, &c., amounted to £13,115, and the amount brought forward was £5,921. After paying the preference dividend, and writing £4,957 off the patent account, £79 is carried forward. In 1920 the profit was £51,643, and a dividend of 25 per cent. was paid on the ordinary shares. The Annual Meeting will be held at the Midland Hotel, Manchester, on March 15 at noon.

ROSARIO NITRATE CO.—The report for the year to September 30 last states that the gross profit was £178,742, including the profit on that part of the stock of nitrate sold for delivery to September 30, the balance of the stocks on the coast being taken at cost. The net profit was £99,442 and £23,206 was brought in. It is proposed to pay on March 16 a dividend of 10 per cent., free of tax, leaving £62,648 to be carried forward.

BRITON FERRY CHEMICAL AND MANURE CO., LTD.—The report for 1921 shows, after charging £5,000 to depreciation and £7,800 for interest on debenture stock, an adverse balance of £15,152. After deducting profit brought in, £2,686, there remained a debit balance of £12,465. The directors have transferred a similar amount from the reserve account to meet this debit. The annual meeting will be held at 9, Queen Street Place, London, E.C., on March 14, at 2.30 p.m.

BORAX CONSOLIDATED, LTD.—Speaking on Tuesday at the annual meeting the chairman (the Earl of Chichester) said the net profit amounted to £378,965. The reserves, not including the carry forward, were £840,665 as compared with £400,565 in 1914. They held no stock at inflated prices on which a loss could be made. A final dividend of 7½ per cent., less income tax, was declared on the deferred ordinary shares, making 12½ per cent. for the year. In regard to warrants to bearer for these shares, the company announce that coupon No. 28 will be paid at the rate of 1s. 6d. per share, less tax, at the registered offices of the company.

Institution of Chemical Engineers

THE sixth meeting of the provisional committee was held on Wednesday, March 1, at 166, Piccadilly, London. The honorary treasurer reported that the balance at bank to the credit of the proposed organisation was £400 19s., and that the sum of £1,232 had been promised and £493 1s. paid. Mr. E. M. Bonus (Messrs. Holmes, Son, & Pott, solicitors, Capel House, New Broad Street, E.C.) submitted a draft proof of the memorandum, articles of association, and by-laws for consideration by the committee before posting to the advisory committee for further discussion. The honorary secretary reported that up to date about one hundred had expressed their willingness to serve on the advisory committee, and names were still coming in. The question of premises was raised by the honorary secretary, and after a considerable amount of discussion the kind offer of Mr. W. J. U. Woolcock, M.P., was accepted, viz., to provide temporary accommodation at 166, Piccadilly, London. It was understood that all communications should be made in future to that address, and a hearty vote of thanks was accorded Mr. Woolcock for his generous offer.

Dispute Over the Weight of Oleine

IN the Mayor's and City of London Court, on March 3, before Judge Jackson, Rubeck Thew & Co., 16, Mincing Lane, London, sued Janaway & Co., 123, Calvert Road, Greenwich, for £9 6s. for a barrel of oleine supplied. For the plaintiffs, it was stated that barrels of oleine weighed about 3 cwt. to 4 cwt. When the one in dispute was delivered to the defendants it weighed 3 cwt. 3 qrs. 8 lb. The defendants returned the barrel to the plaintiffs, who weighed it and found it exactly as stated. They therefore refused to make any deduction from the account, and sent the cask back again. A witness for defendants said he found that the barrel and oil weighed 3¼ cwt. Judge Jackson said the defendants must have made a mistake, and accordingly gave judgment for the plaintiffs with costs.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

LOCALITY OF FIRM OR AGENT.	MATERIALS.	REF. No.
Canada	Perfumes, soaps, powders, &c. ..	—
	Tanning extracts	D.O.T. 7931/ E.D./ SC2
Federated Malay States	Paints, &c. (Official Secretary, Australia House, Strand, London)	412/20/ 7/1051
Belgium	Perfumery, pharmaceutical products	—
France	Soap and candle materials	
Hungary	Chemicals, colours and coal tar products.....	—
United States of America	Linseed oil (raw and boiled).....	D.O.T. 14356/ F.W./ SC 2.

Tariff Changes

EGYPT.—Revised import tariff valuations for non-ferrous metals (with effect from February 1 to March 31, 1922, or until denunciation) was published in the Board of Trade *Journal* (March 2, p. 242).

INDIA.—For Customs purposes the expression "perfumed spirits" is defined as "a mixture containing only alcohol, water, and essential oil or attar with, possibly, a little liquid ammonia or neutral colouring matter, and of an alcoholic strength not falling short of proof spirit."

Natural Synthesis in Plants

AT a meeting of the Birmingham University Chemical Society, held on Monday, March 6, Mr. N. D. Sylvester, B.Sc., read a paper on "Natural Synthesis in Plants." After a brief summary of the development of organic chemistry the lecturer dealt with the metabolic processes in plants and with Moore's conception of "Biotic Energy." The assimilation of carbonic acid by plants was discussed both from the physical and the chemical standpoints and the various theories of photo-synthesis were enumerated by the lecturer. Mr. Sylvester then discussed the polymerisation of formaldehyde to sugars. He dealt very fully with the energetics of this reaction, showing how the osmotic energy set free could be converted into chemical energy thus rendering an apparently endo-thermic reaction possible in plants without the addition of external energy. Finally the recent work of Baly, Heilbron and Barker was reviewed, and the possibility of chlorophyll functioning as a photo catalyst for both stages of the assimilation process was commented upon.

Chemical Trade Wages Deadlock

A MEETING of the workers' side of the Joint Industrial Council for the Chemical Industry was held in London on March 2, when the position in regard to the wages dispute was reviewed. In connexion with the strike of South Wales chemical workers it was decided to get into touch with the affiliated executive committees with a view to seeing how far the employers' demands could be contested. The result of these deliberations was expected to be made known this week, but up to the time of going to press no definite information was forthcoming. According to a correspondent of THE CHEMICAL AGE forty men at the Pontardulais Chemical Works have accepted a compromise and are taking no part in the strike.

A Chemist's Reflections at Breakfast

AN address on "The Chemist at the Breakfast Table" was delivered by Dr. J. C. Irvine at Leeds University last week, Professor Smithells presiding. The lecturer visualised in an interesting and amusing fashion the reflections of a chemist regarding the familiar objects on the breakfast table and their manufacture. He demonstrated in this manner that chemistry enters into our daily life at all points.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

BERGIN, Claude Effie Margery (trading as LEIGHTON & LEIGHTON & LEIGHTON LABORATORIES), 35, Gray's Inn Road, W.C., chemist. £55 10s. 2d. January 3; and £21 6s., January 6.

POCHIN, A. W., 15, Preston Road, Southport, chemical manufacturer. £14 6s. 6d. January 3.

TAYLOR, P. R., 25, Marybone, and 24, Ivanhoe Road, Liverpool, chemical engineer. £13 3s. 2d. January 5.

TIMMINS, Adrian A. L. (and wife), 113, Lynn Street, West Hartlepool, chemist. £45 2s. January 5.

Deed of Arrangement

LUREY, Leopold, 202, North Street, Leeds, pharmacist. Filed, March 2. Trustee, C. H. Baker, 1, Albion Street, Leeds, accountant. Liabilities unsecured, £926; assets, less secured claims, £289. The following are creditors: Goodall, Backhouse & Co., Leeds, £48; Hirst, Brooke & Hirst, Ltd., Leeds, £220; Ayrton Saunders, Ltd., Liverpool, £36.

Receiverships

ABBEY CO., LTD. E. F. Jones, of 4, Fenchurch Avenue, London, E.C., was appointed as receiver on February 22, 1922, under powers contained in debenture dated March 4, 1921.

ALBY UNITED CARBIDE FACTORIES, LTD. R. H. Hoare, of Norfolk House, Norfolk Street, London, W.C.2 ceased to act as receiver on January 18, 1922, of the properties comprised in indentures dated February 2, April 7, and September 6, 1921.

GORDON, H., LTD. A. E. Tilley, of 8, Staple Inn, W.C. 1, was appointed as receiver and manager on February 20, 1922, under powers contained in first mortgage debentures, dated June 9, 1921.

HIRST & CO., LTD. A. B. Hirst, of Dronfield, Derby, was appointed receiver on February 17, 1922, under powers contained in mortgage debenture dated December 13, 1921.

REDIO CO., LTD. J. K. Garioch, of 16, King Street, Cheapside, E.C., was appointed receiver on February 20, 1922, under powers contained in debenture dated April 22, 1921.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act, of 1908, provides that every Mortgage or Charge, as described therein, created after July 1, 1908, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges which would, if created after July 1, 1908, require registration. The following Mortgages and Charges have been so registered. In each case the total debt, as specified, in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced since such date.*]

ALLEN-LIVERSIDGE, LTD., London, S.W., acetylene manufacturers.—Registered February 24, £100,000 debenture stock secured by Trust Deed dated February 14, 1922; charged on Eyot Works, Hammersmith, and property at Hull and Glasgow, certain shares, &c., also general charge. *£50,000. January 12, 1922.

MARLEY HILL CHEMICAL CO., LTD., Newcastle-on-Tyne.—Registered February 24, £9,000 debentures, part of £100,000; general charge (except uncalled capital). *£40,000. December 31, 1921.

Satisfaction

WHITE BAND MANUFACTURING CO., LTD., South Croydon, chemists.—Satisfaction registered February 23, all moneys, &c., registered December 16, 1919.

London Gazette

Companies Winding Up Voluntarily

CELLULOID & COLLODION PRODUCTS CO., LTD. R. F. W. Fincham, of 3, Warwick Court, Gray's Inn, W.C., appointed liquidator. Meeting of creditors at the offices of the liquidator, on March 13, at 12 noon.

GRAHAM, ALEX., & CO., LTD. C. M. Skinner, of 7, Norfolk Street, Manchester, appointed liquidator. Meeting of creditors at the Chartered Accountants' Hall, 60, Spring Gardens, Manchester, on Tuesday, March 14, at 11.30 a.m.

Liquidator's Notice

TYNE GLASS WORKS, LTD. Meeting of creditors at the offices of the Lemington Glass Works, Ltd., Lemington-on-Tyne, on Saturday, March 18, at 11 a.m. Particulars of claims by March 17 to A. Loscombe Wallis, c.o. Lemington Glass Works, Ltd., Lemington-on-Tyne, the liquidator.

Partnerships Dissolved

BELBIN, Thomas St. John, and HARRISON, George William, manufacturers of chemical appliances at Napier Lead Works, Laisterdyke, Bradford, under the style of G. W. HARRISON & CO., by mutual consent as from October 15, 1921. Debts received and paid by St. John Belbin, who will continue the business.

CURRIE, William Clarke, NIELD, Charles Edwin, KNIGHT, James Arthur, and DAVIES, Percy, fertiliser manufacturers, at Kelvinside, Seacombe, co. Chester, and elsewhere, under the style of CURRIE, ROWLANDS & CO., by mutual consent as from September 30, 1921, in so far as it concerns J. A. Knight.

New Companies Registered

J. A. ATKINSON, LTD., 34, Lucy Street, Old Trafford, Manchester. Chemical and dye manufacturers and merchants. Nominal capital, £5,000 in £1 shares.

WALKER H. BROWN & CO., LTD., 4, Fenchurch Street London. Chemical merchants, &c. Nominal capital, £75,000 in £1 shares.

DEE SUPERHEATERS, LTD., 275, Halesowen Road, Netherton. Manufacturers of superheaters, water softeners, and chemicals and appliances for boiler cleaning and water softening. Nominal capital, £3,000 in £1 shares.

FERTILISER & PRODUCE CO., LTD., 37, Mark Lane, London. Manufacturers of, and dealers in, fertilisers, oils and fats, and chemicals. Nominal capital, £15,150 in 15,000 preference shares of £1 each and 3,000 ordinary shares of 1s. each.

INVICTA OIL & CHEMICAL CO., LTD. Manufacturers of, and dealers in, oils, varnish, chemicals, &c. Nominal capital, £250 in £1 shares. A subscriber: H. E. T. Rudd, "Widmore," Bromley, Kent.

J. M. IRVING & Co., LTD. Chemical manufacturers and merchants and manufacturers of and dealers in aniline and alizarine colours and other dyes. Nominal capital, £5,000 in £1 shares. A director: H. Cunliffe, 132, Weaste Lane, Pendleton, Manchester.

JEFFERY JEFFERIS, LTD. Manufacturing and General chemists. Nominal capital, £1,000 in £1 shares. A director: T. G. J. Jefferis, 111, Acton Vale, London.

FRED J. RYLAND & CO., LTD., 194-6, Bishopsgate, London. Chemical merchants, &c. Nominal capital, £3,000 in £1 shares.

WILLIAM SOMERVILLE & SON, OIL REFINERS (UNLIMITED), Blantyre Oil Works, Blantyre. Oil refiners, colour and varnish manufacturers, &c. Nominal capital, £50,000 in £1 shares.

STRONGHOLD PAINT & PRODUCTS CO., LTD., 1-6, Railway Place, Fenchurch Street, London. Manufacturers of paint and kindred products according to a secret formula. Nominal capital, £1,000 in £1 shares.